BRITISH MEDICAL JOURNAL

LONDON: SATURDAY, MARCH 2nd, 1935

CIRCULATORY DISEASES OF THE EXTREMITIES*

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It is only within recent years that the group of conditions collectively described as circulatory diseases of the extremities has come within the sphere of surgical interest and attention. Hitherto they have been regarded as matters of medical significance; in fact, the surgical textbooks of a decade ago made little or no reference to the subject except in so far as gangrene and its treatment was concerned.

It is interesting to recall how the wider question has come to attract the notice of the surgeon. As long ago as 1889 Alexander of Liverpool performed bilateral extirpation of the superior cervical sympathetic ganglion in a case of epilepsy, and this operation, which may be described as a surgical experiment, inaugurated a phase of interest which has had, and continues to have, enormous influence upon our conception of disease and the methods by which certain disease processes may be controlled. It suggested what had hitherto been unsuspected—the possibilities of operation upon the autonomic nervous system—and to-day we are the possessors of a vast fund of knowledge which is beginning to mould our views as to the proper indications for sympathetic intervention and the means by which intervention may be appropriately achieved.

I think the physiologist and the anatomist will agree that the somewhat catholic interests of the surgeon, and the results which he has claimed, have stimulated in them a fresh interest in the autonomic nervous system. As creators of the foundation upon which the structure of medicine and surgery is built, they no doubt felt that the time had come to set their house in order, and that they have done so with success is evident to anyone who has attempted to follow the work of the past ten years.

As is inevitably the case when new fields are entered, the net was cast wide, and a variety of conditions differing in their origin and pathology were treated by operations intended to modify the autonomic innervation. Among these conditions circulatory disturbances of the extremities have received a considerable measure of attention, and at one time or another optimistic claims have been made for the benefits resulting from one or other of the various types of sympathetic denervation. But the warning finger of a kindly criticism has again been raised, and in this instance the clinical physiologist has acted as our mentor. We owe a great debt to these investigators, and above all to Sir Thomas Lewis and his collaborators, who by most detailed, accurate, and convincing experiment have put our knowledge of the peripheral circulation upon a sure and a scientific basis. And so it is that we have had to reconsider many points, to recast our views, perhaps to abandon beliefs which hitherto seemed secure, and in the light of modern knowledge to formulate a well-reasoned attitude towards the possibilities of surgical treatment in circulatory diseases of the extremities.

These are a few of the reasons why it seems to be timely to discuss in a general fashion some of the problems of these common, often serious, and always interesting maladies.

Anatomy and Physiology

We are accustomed to picture the vascular system as arranged upon a plan in which the subdivision of arteries results in arterioles, and these in turn open into a complex system of capillary channels, from which the blood is collected into venules and thence by veins of increasing calibre until they open into the chambers of the heart. So far as it goes, such a description is accurate, but it is not the whole truth, for, where the skin of the hands and feet is concerned, there is reason to believe that direct anastomoses exist between arterioles and venules. Some extremely interesting work on this question has been done by Grant and Bland. They have shown that such arterio-venous anastomoses are principally encountered in the palmar skin of the hands and in the skin of the soles of the feet, and that they are particularly numerous in the skin areas at the ends of the digits. In so far as these structures are minute channels of communication between arteriole and venule, we may group them as capillaries, but my point is that they represent something different from the conception of the capillary arrangement as we are accustomed to visualize it, and as many textbooks represent it.

There is a further point of significance. R. T. Grant has shown that the channels of anastomosis are the site of an unusually profuse distribution of perivascular sympathetic nerve fibres, and that they are peculiarly responsive to the action of stimuli, dilating as a reaction to mechanical stimulation, histamine, acetylcholine, and cold, contracting in the presence of adrenaline. It is true that the experiments upon which these conclusions were based were carried out on the rabbit's ear, but there is every reason to believe that comparable conditions exist in the human hand and foot, and, such being the case, we must regard these anastomoses as playing a most significant and important part in such vascular reactions as may be manifested in the skin of the hands and feet.

This being the arrangement of the vascular distribution, we ask ourselves the question, What are the means by which contraction and dilatation of the various vessels are secured? That a variation occurs is apparent to

* An address to the Cardiff Division of the British Medical Association, December 12th, 1934.

every one of us, and it is equally evident that when the process of accommodation fails we encounter discomfort, and, it may be, the disaster of disease. The mechanism, therefore, must be a highly important feature in the economy of our bodies, and one which is called into being under various circumstances, and with a constancy which might justify the use of the term "ubiquitous." It functions in response to variations in temperature of the body and of the medium by which the body is surrounded, it regulates in some measure the capacity of the part to accomplish work, it forms part of the defensive mechanism by which the body counteracts injury and opposes disease, and it is constantly required in the presence of such physical influences as gravity and pressure. It is surely important to have some understanding of the means by which such a universal and significant process of accommodation is activated and controlled.

The process of *vaso-constriction* is in large measure understood, and we appreciate that it is the result of a stimulus conveyed to the blood vessels along the sympathetic nerve fibres. The stimulus may originate in a variety of ways. It may be the direct result of an emotion which, relayed through a centre in the thalamus, results in a widespread response, or more indirectly an emotional influence may so activate the adrenals that a sympathetic stimulus ensues. In the majority of instances, however, the sympathetic impulse which results in vaso-constriction is the result of a peripheral stimulus, is conveyed by afferent nerves, is relayed through the spinal cord, and by the medium of the rami communicantes passes to the sympathetic ganglia, and thence to the ultimate vascular distribution. The paths by which impulses pass to the vessels are a matter about which there is some dispute. It is certain that large numbers of sympathetic fibres run in the ordinary mixed nerves, leaving the parent tract at intervals to pass to the vessels, but it is often taught that a considerable portion of the sympathetic vascular distribution runs in the outer coats of the larger arteries, and is thence distributed to the ultimate reaches of the vessel. It may be so, but I confess I have never been able to demonstrate non-medullated nerve fibres in the tissue removed from the outer coat of a large artery.

Vaso-dilatation is a vessel response about which there has been much dispute, and the influences which induce it are not yet fully known. It has been suggested that it is due to an inhibition of the vaso-constrictor impulse, and that its genesis is therefore as much a sympathetic response as vaso-constriction is, a view which implies that the vascular system is the subject of a reciprocal innervation. There is something to be said in favour of the contention.

It has been claimed that a parasympathetic stimulus secures vaso-dilatation, and in the case of the chorda tympani the dilator response which follows stimulation is probably due to the parasympathetic control, but in the case of the limbs the primary vaso-dilator nerve influence does not appear to have been convincingly demonstrated. There is evidence, however, of a particularly convincing character that vaso-dilatation occurs in response to a biochemical action; a stimulus applied to the skin of such a degree as to cause damage to it results in the release of a biochemical product to which the name H-substance has been given, and which shows certain resemblances to histamine and to acetylcholine. It is probable that this substance induces vaso-dilatation in two distinct ways: by its direct effect upon the arteriole-capillary wall, and by an axon reflex. In the latter event the stimulus from the dermal sensory nerves is reflected along the collateral twigs which ramify in the arterio-venous anastomotic area.

Skin Reactions in Response to Cold

I have laid these various points before you in some detail because a knowledge of them is essential if we are to appreciate the clinical considerations, and I now propose to apply our understanding of the physiology in order to explain the reactions which appear in a limb when it is submitted to the influence of cold. It is important to discuss this problem, because a low temperature is one of the most constant factors in initiating the vascular changes which constitute disease. Moreover, the effects of cold upon a normal limb produce a series of reactions which resemble in some degree the changes which we encounter in the diseased state.

If the hand is submitted to the influence of cold through the medium of air or water for a period of fifteen to twenty minutes, the temperature being maintained at 15° to 18° C., the surface temperature of the part falls to within 5° of the cooling medium, while at the same time the surface blanches. The individual is fully conscious of the fall of temperature, though the sensation cannot be described as painful. When movements of the fingers are carried out, particularly those calling for fine adjustment and co-ordination, he is conscious also of what may be described as "sluggishness" in their muscular activity. These changes are due to a diminution in the blood supply to the area, the result of vaso-constriction, which probably affects the entire vascular distribution of the part—artery, arteriole, capillary anastomoses, and in all likelihood the vein. The stimulus which originates the constriction is conveyed from the skin by the sensory nerves, and thereafter carried to the peripheral vessels by the sympathetic. The underlying motive of the change is to prevent undue loss of heat by radiation and convection, and it is to be regarded, therefore, as a protective reaction. If the hand is now withdrawn from the low temperature medium and dried (if it has been immersed in water), and if the individual is in a room of average temperature (18° to 20° C.), a phase of reaction sets in. The skin is flushed, the surface temperature rises, perhaps as much as two or three degrees above that of the room, the subject is conscious of a sensation of exaggerated warmth in the part, and appreciates that there is now a vaso-dilatation, so that the area is flushed with blood.

Let us now repeat the experiment, in this instance exposing the part to a lower temperature (10° C.) than that employed on the first occasion. After a preliminary stage of pallor and a fall in surface temperature the skin of the hand is found to acquire a cyanotic hue, the coloration being mainly evident on the back of the hand and fingers, and to a lesser extent on the palmar surface of the digits, the skin of the palms being less obviously affected. It is interesting to note that the cyanotic response appears more readily when the hand is exposed to cold air than to cold water, possibly for the reason that a thin layer of the fluid next to the skin acquires a temperature slightly higher than that of the main bulk. It is possible that two reactions are at work in this instance: one a contraction of the arterioles and smaller arteries, the result of a sympathetic stimulus, the other a capillary and arterio-venous dilatation due to the release of H-substance from the deep layers of the skin. As the result of a state in which there is arteriole contraction and capillary dilatation, the rate of blood flow in the latter tends to fall, but, as oxygen exchange continues, the carbon dioxide content in this portion of the circulation rises to an unduly high level. It appears, therefore, that a dilated capillary and anastomotic field laden with blood of a high CO_2 content explains the cyanotic appearance of this stage of low temperature reaction. When the experiment is interrupted and the hand is restored

to the surroundings of a normal room temperature, the arteriolar constriction is relaxed, and with the increased volume and pressure which ensue, the somewhat stagnant capillary content is driven onwards into the veins. The field is now suffused with arterial blood, the reaction being indicated by a rise of skin temperature which for a time (fifteen to twenty minutes) may exceed the normal by several degrees, and by the replacement of the cyanosis with a bright red blush. During this stage of the reaction the individual often experiences a sense of heat and tingling in the hand.

To make the picture complete, however, it is necessary to carry the experiment yet a stage further, and to observe the effect of a still lower temperature (5° C.). In this instance the hand begins to ache to a degree that is definitely painful, the skin temperature falls to a point which is about 2° C. above the cooling medium, and the skin surface demonstrates a series of distinctive colour changes. At first there is a generalized pallor which lasts for a period of two to three minutes, and is then replaced by a faintly cyanotic tinge, particularly on the dorsum of the hand and at the finger-tips. Presently this disappears, and, when the exposure to cold has lasted for a period of about five minutes, the hand up to the level of the wrist-joint assumes a bright red colour. And yet the skin temperature is low ; it is within 1.5° to 2° of the cooling medium. If the experiment is continued over a relatively long period of time (let us say sixty minutes) there are periodic rises of skin temperature by as much as 3° or 4°, a feature which has been recorded by Sir Thomas Lewis in his experiments, and to which he has given the descriptive title of " hunting." Each rise is always succeeded by a secondary fall to mean level. When the hand is removed from the cooling medium the skin temperature rises abruptly, and within ten minutes it has reached a point which is often 4° to 5° C. above that of the other hand ; thereafter it gradually settles down to the normal level. These phenomena, which are sometimes referred to as " over-cooling," have aroused great interest. They have been shown to occur independently of sympathetic nerve control, but do not arise if the sensory nerve supply to the area has been divided and sufficient time allowed to elapse for the severed sensory nerves to degenerate. Those who have investigated the reaction believe it to be the result of the release from the skin of H-substance, which, partly by direct action upon the capillaries and partly through an axon reflex, results in a capillary and anastomotic dilatation. It may be asked why in this instance the skin area should show a red coloration in contrast to the cyanotic response elicited at a slightly higher temperature. The answer seems to be that the unusually low temperature affects the tissues to such an extent that the oxygen exchange is interrupted, and blood which is saturated with oxygen trickles through the dilated capillary field. I would add that if the exposure to a low temperature is persisted in the capillary endothelium is so damaged that leakage of serum occurs, and blisters form.

I have described the skin reactions in response to cold in some detail because they represent in a certain degree the phenomena which are encountered in disease, and it is obvious that an appreciation of the source of these changes is a valuable guide to the understanding of disease and to the measures by which it may be relieved.

The Clinical Considerations

When we come to consider the clinical aspects of this question we encounter a difficulty: it is that of recognizing a classification which is both inclusive and discriminating. In certain of the vascular diseases the characteristics are so definite that no doubt as to their nature exists. For example, in arteriosclerosis we recognize a condition which is distinctive in its pathology, in the group of clinical features which it engenders, and in the sequelae which result. But a clear-cut entity such as this is the exception rather than the rule, and even in Raynaud's disease, which is usually considered to possess specific features, we find variations which diverge from the accepted standard. Most confusion, however, arises in relation to what are obviously circulatory disturbances mainly manifest in the skin, conditions in which there are obvious colour changes, phases of oedema, subjective disturbance of sensation, and interference with the full functional use of the part. It is here that the real difficulty arises, and I believe that much work remains to be done before these problems are fully understood.

I recognize, however, that if there is to be cohesion in my remarks, some type of classification must be advanced, and, though I am willing to agree that the grouping I suggest is by no means free from criticism, I shall state it as a guide to what I have to say on the clinical aspects of this problem. The arguments upon which the classification are based may be summarized as follows.

1. We encounter certain conditions in which the disturbance appears to be confined to the capillary distribution, including under this heading the anastomotic channels which connect the arterioles and the veins. In this category there are two conditions: the cold blue extremity and the red, cold, and painful extremity. In order to identify these errors a Greek terminology has been enlisted, and it has been suggested that the first condition be called *acrocyanosis* and that the term *erythromelalgia* be applied to the second. It is to be noted that in these disturbances no changes are apparent in the larger vessels, and it therefore seems reasonable to group these disturbances under the heading of *capillary diseases*.

2. In many instances it is possible to demonstrate changes in the arterial wall such as must interfere with the efficiency of the peripheral circulation. It seems proper, therefore, to group errors attributable to this source as *arterial*, and to subdivide them into *spasmodic*, *inflammatory*, and *degenerative* types, according to the changes which exist.

I suggest that it will suit our purpose if, based upon these considerations, we accept the following simple classification of vascular diseases of the extremities.

A. *Capillary diseases :* (1) acrocyanosis ; (2) erythromelalgia.

B. *Arterial diseases :* (*a*) spasmodic ; (*b*) inflammatory ; (*c*) degenerative.

I have purposely avoided mention of the venous groups, because they come into a different category, and it would complicate the position to no useful purpose to include them. Let us now look at certain of the more significant clinical considerations which arise.

Capillary Group (Acrocyanosis and Erythromelalgia)

I expect that most of you have had experience of cases which may be placed in this group. Those who suffer from these disabilities are usually females. In acrocyanosis the story which they recount is briefly that, as a result of exposure of the hands or feet to a low temperature, they experience a series of disconcerting signs and symptoms: the parts become cold ; the skin acquires a deep blue colour ; and movements become impaired, so that the finer adjustments of co-ordinated movements are sluggish and awkward. Under the impression that raising the temperature will relieve the disturbance the sufferer proceeds to immerse the part in warm water or to hold it in front of a fire. The response is disconcerting,

for, though the blue colour disappears and the part becomes warm and red, a burning pain is felt and swelling occurs. These features gradually disappear and the part returns to normal, but, in certain instances, red, slightly tender, and intensely itchy patches appear in the skin at points at which pressure is apt to be exerted, and these constitute the condition of erythema pernio or chilblains. The feet suffer less than the hands, probably owing to the protection of shoes and stockings, but we have had experience of several cases in which feet manifestations were particularly well marked.

In close relationship to the acrocyanotic type is the *erythromelalgic* variety. The hands and feet of a sufferer from this disorder are exactly like those of a child who has been amusing himself by making snowballs. The parts are intensely cold, both subjectively and to touch, the skin has a bright red colour, and the finer movements are somewhat interfered with, but, as in acrocyanosis, the disability which is most complained of arises when the part is warmed. When the feet are affected the warmth of the bedclothes initiates a feeling of fullness and throbbing, which interferes with rest, so that many of these patients make a practice of sleeping with their feet uncovered. While cold is definitely the factor which appears to initiate the changes of acrocyanosis, the same influence is not so evident in erythromelalgia, though no doubt it plays some part.

In looking around for an explanation of the changes which characterize these conditions, one cannot but be impressed with the resemblance which they bear to the features which arise in the normal hand when it is subjected to a low temperature; with this difference, however —that in acrocyanosis and erythromelalgia the changes appear in response to temperatures which in a normal hand would have little or no effect, while the changes themselves are also more intense and more lasting. I imagine the process which ensues in acrocyanosis is somewhat as follows. In certain individuals the skin areas of the hands and feet are peculiarly sensitive to the effects of cold, with the result that a stimulus which in the ordinary individual would have little or no effect induces in them an increased reflex, and at the same time the production in undue amount of the H-substance. The result is a combination of responses ; there is a contraction of the arterioles owing to an increase in their tone, but at the same time there is a dilatation of the capillary field secondary to the effect of the H-substance. The consequence is that the skin vessels accommodate an increased amount of blood, sluggish in its progress and yet capable of accomplishing a gaseous exchange, so that it parts with its oxygen and acquires an increased amount of carbon dioxide. These are probably the explanations of the cold, blue hands, while the basis of the change is a skin which is unduly sensitive to the influence of cold.

In erythromelalgia we are probably witnessing a further degree of the same reaction, but in this instance, and probably as a result of a still greater degree of skin sensitivity, it is not only that the capillaries are dilated, but the tissues which surround them are so affected that they are unable to accept oxygen from the blood or to part with the products of their metabolism. The area is therefore not only cold—it is red ; but it is coloured by a blood which is fulfilling no useful purpose, for, while its volume is increased its rate is retarded and its gaseous exchange in abeyance.

These conditions have hitherto proved particularly resistant to treatment, and when the operation of sympathectomy came into being it was felt that here might be a means by which improvement might be secured. I have no doubt that the operation has been employed on many occasions on these indications, and it would be helpful to know if any large measure of success has been secured. We have had experience of seven cases, and in each instance the operation of periarterial sympathectomy was carried out. The results have been disappointing ; they are somewhat more satisfactory in acrocyanosis than in erythromelalgia, probably because the former condition is characterized by an appreciable degree of arteriole constriction which the operation partially relieves. Speaking generally, however, the results have fallen short of expectation, and when one realizes that much of the pathology depends upon a biochemical influence exerted upon the capillary area one is not surprised, because sympathectomy has no demonstrable influence upon the phenomenon. Apart from the preventive measures of protecting the part from cold, the only line of treatment I can suggest is the use of sulphur. It has been stated that this drug has the effect of counteracting the H-substance, and on this assumption cases have been treated by the application of sulphur ointment to the skin of the affected area, and by the intravenous injection of collosol sulphur (Crookes) in amounts of 2 to 5 c.cm.

Arterial Group: The Spasmodic Errors

Raynaud's disease may be regarded as a typical example of this class of disturbance, and, though there are probably variations and degrees so that a subsidiary classification may ultimately be adopted, we may accept the condition as representative of the spasmodic type of derangement. The clinical picture is familiar to you. Usually occurring in females, it is generally a bilateral disease affecting both hands and (more rarely) both feet. Cold is the factor which initiates the process, though there are some who think that emotional strain may be an originating influence. We must be careful in accepting this conclusion, however, unless we can absolutely exclude a variation in room temperature which in the normal person would have no apparent effect. The change is introduced by a blanching of the fingers, which at first appears in the tips and gradually extends proximally. The parts have a shrunken appearance, and at this stage a painful tingling is complained of. After a time the picture alters, and the pallor is replaced by a cyanotic hue ; the tingling disappears, to be replaced by a dull ache, while the finer movements of the fingers are so interfered with that the sufferer cannot do such things as fasten a button or tie a bow. Meanwhile the surface temperature, which fell coincident with the beginning of the attack, remains several degrees (centigrade) below the normal skin level and below that of the atmosphere of the room, assuming that this is at a normal level (18° to 20° C.). Eventually the attack subsides, and as it does so the fingers and the hand become flushed, the skin temperature rises, and the parts have all the appearance of being flushed with arterial blood. As this reaction develops a burning sensation is experienced, and patients complain that the discomfort of this stage exceeds that of the earlier phases. Furthermore, the hand may swell up, owing to an oedema of the tissues. I may add that, should the patient, under the impression that raising the skin temperature will relieve the disturbance, place his hand in warm water while the part is in the blanched or cyanotic stage, it will assume a deep purple hue—in fact, it will become almost black. The reaction will subside, but the secondary discomfort is so great that the manœuvre is rarely repeated. The real seriousness of the error, however, lies in the results which are encountered when the phenomena have recurred over a long period of time. The nails become brittle, a chronic onychia is apt to develop, the thick sensitive pulp becomes shrunken, and the skin undergoes a sclerodermic change. It sometimes happens (though, fortunately, rarely) that a type of dry gangrene affects the periphery of the part, so that the fingers and toes are partially necrosed.

The pathology underlying the lesion appears to be of the nature of an intense constrictor response in the smaller arteries, principally at the point where the arteriole distribution begins. The degree of spasm is so intense in the early blanched phase that the blood supply to the periphery appears to be entirely arrested ; it is certainly the case that if the finger is incised at this stage no bleeding occurs.

It is more difficult to explain the genesis of the cyanotic phase. It seems unlikely that a persistence of the vaso-constriction could produce a dilatation of the capillaries and their engorgement with venous blood ; a constriction of the veins might induce such an appearance, but there is no evidence that they are affected. It may be that the changes are to be explained in the following way. Subsequent to the original and intense constriction a certain amount of relaxation ensues—sufficient, at least, to permit the return of a proportion of blood into the capillary circulation ; but, owing to the anaemia and the fall of skin temperature, the amount of H-substance released is so great as to cause capillary dilatation, and, though the rate of flow is reduced because of the degree of vaso-constriction which still persists, the capillary and anastomotic fields gradually fill. The interference with the tissues is not sufficiently intense to affect the gaseous exchange, and therefore the semi-stagnant capillary stream continues to give off its oxygen and to take up carbon dioxide. If the hand is placed in warm water during the cyanotic stage there is a relaxation of the arteriolar spasm, and the capillary field receives a sudden access of blood with which for the moment it is unable to deal, and it therefore becomes engorged to an extreme degree, so that the skin is almost black in colour.

The factors actually responsible for the various reactions are extremely difficult to assess ; an undue degree of vaso-spasm may be attributed to an exaggerated stimulus transmitted by the vaso-constrictor fibres of the sympathetics ; on the other hand, the fault may lie in the vessel walls, so that a stimulus of normal strength may induce a reaction out of all proportion to the impulse which instituted it. Certainly irritation or injury of the skin is a factor in one stage of the disease, but the part which it plays is probably secondary to a more primary error. I dare say that the ultimate solution will be found in a combination of circumstances—an abnormal degree of tone in the smaller arteries and an unduly sensitive condition of the skin.

It is not my purpose to discuss the problem of treatment in any detail, but I would like to make certain general observations. If we accept the view that a vaso-constriction is the essential factor in the aetiology our aim must obviously be to use such measures as will secure relaxation of the spasm. It is helpful from the point of view of prognosis and also as a means of demonstration of the spasm to submit the patient to certain tests which will temporarily relax the spasm. Some procedure of this kind is often adopted before proceeding to treatment. A number of methods have been described to secure vaso-dilatation, such as immersing the extremities for thirty-five minutes in water at 43° to 45° C., anaesthetization of the peripheral nerves, the induction of hyperpyrexia by the injection of a typhoid vaccine, spinal anaesthesia, and the environment test of raising the temperature of the air around a limb which has been previously cooled. All of these, though differing in method, attempt to secure the common aim of cutting out the vaso-constrictor element and securing the maximum of vaso-dilatation. It is obvious that a positive result has a treble significance: it affords proof of the existence and the degree of the spasmodic element, it excludes or assesses the existence of any degree of permanent occlusion change, while it offers valuable information on the prospects of success in treatment.

It is unfortunately true that where Raynaud's disease is concerned no constrictor eliminating procedure secures complete relaxation, and we are forewarned, therefore, that treatment as hitherto carried out is apt to prove disappointing. The disappointment is only too well justified. We advise the patient to protect the part from cold, and such a preventive measure is important, but it is obvious that it cannot always be secured. Massage and exercises and diathermy have been used with no real permanent benefit ; vaso-dilators such as peptone and acetylcholine have yielded disappointing results. So far as I am aware the method of alternate suction and pressure described by Landis and Gibbon has not been employed in the spasmodic cases, but it has yielded encouraging results in degenerative and inflammatory types of obliterative disease, and there appears to be no reason why it should not be given a trial in Raynaud's disease. The chief interest of treatment, however, centres around the results obtained by sympathectomy, and particularly the radical operation of ganglionectomy, by which the sympathetic innervation of a limb is mainly, if not entirely, removed. We have had experience of four cases treated by this means, and, though at first the results appeared to be most satisfactory and even dramatic, time brings an element of disappointment. It is our experience that sympathectomy does not afford a permanent cure of the disease. It is true that the attacks are less frequent and less severe, that the pain which accompanies the "thawing" process is much less intense, and that superficial gangrene seems to be prevented ; and these are great advantages no doubt, which, I believe, fully justify operation. On the other hand, we are equally satisfied that sympathectomy will not prevent attacks developing if the parts are submitted to the influence of cold, and for this reason it seems evident that there is something more in the pathology of Raynaud's disease than a vaso-constrictor impulse conveyed by the sympathetics.

The Inflammatory and Degenerative Obliterative Types

Time does not permit me to say more than a few words about disturbances which come under this heading.

The changes, whether inflammatory or degenerative, are obliterative in their results, and, though a certain element of superadded spasm is probably present in the early stages, an ultimate mechanical closure of the smaller vessels is inevitable. *Thrombo-angiitis obliterans*, an example of the inflammatory type, has a curiously phasic character. There are intervals of improvement which are probably coincident with the opening up of pathways of collateral circulation, but, as these become affected, the symptoms recur with increased intensity until additional channels become available: these, in their turn, become affected, and so the process continues until the blood flow is so completely arrested that death of the tissues ensues. The veins are affected, but to a lesser degree than the arteries, and at a later stage of the disease, and, though the exact nature of the aetiology has not been discovered, everything points to the changes resulting from a toxin which circulates in the blood stream and which primarily affects the internal coat of the vessel.

Somewhat similar changes are encountered in association with the toxaemia of syphilis, tuberculosis, rheumatism, diabetes, and other constitutional diseases. In the *degenerative* types, as represented by *arteriosclerosis* of the nodular (atheroma) and medial (arteriosclerotic) varieties, the process is one in which patches of cellular connective tissue become the sites of fatty degeneration, which, in turn, are impregnated with calcium phosphate, and, though some measure of vasospasm accompanies the early stages of the disease, the tissue change is permanent and, so far as we know, irremediable.

There are cases both of the inflammatory and of the degenerative types in which a spasmodic element may be so definite as to lead to difficulty in an accurate diagnosis, and in eventualities of this kind the tests which I have mentioned are of such value that I think it is obligatory to employ one or other of them before assuming that we can afford these cases some measure of relief by procedures designed to secure vaso-dilatation.

Treatment, apart from amputation, is frankly discouraging. Vaso-dilators of a chemical nature, such as muscle extract, peptone, and acetylcholine, have but a temporary value, and that only when the spasmodic element exists. The alternate suction and pressure treatment of Landis and Gibbon has not been employed in this country to any extent so far as I am aware, but promising results have been claimed by these authors in cases of thrombo-angiitis. Sympathectomy, which at one time appeared to offer a solution, has failed to yield the results which were hoped for. I do not say that it is valueless—by no means ; it increases the degree of comfort, it lessens the pain, and it probably delays the onset of skin ulceration and gangrene—but it cannot be said to have any permanent effect upon the progress of the disease. And when we consider the pathology which underlies these lesions it could not very well be otherwise, for the vasospasm which sympathectomy relieves is but an incidental and often a minor part of the pathological picture.

RELATIONSHIP OF JOCHMANN'S AND OTHER ENZYMES TO THE ENCEPHALITOGENIC AGENT IN LYMPHADENOMATOUS LYMPHATIC GLANDS

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It has been shown by Gordon (1932–3) and van Rooyen (1933–4) that the intracerebral inoculation of rabbits with emulsions of lymphadenomatous tissue is followed by highly characteristic nervous lesions in the animal. Thus, after a definite incubation period lasting from three to four days, the animal develops signs of ataxia, incoordination, muscular spasms, head retraction, and generalized encephalomyelitis with usually a fatal result. A number of animals, however, that are affected to a lesser degree pass into a chronic state of disease, in which progressive atrophy of muscles and general emaciation are the principal features.

Such effects as these cannot be produced by the intracerebral inoculation of lymph glands affected with lymphosarcoma, leukaemia, carcinoma, tuberculosis, or syphilis, and thus the phenomenon has served as a biological test for the diagnosis of Hodgkin's disease. The value of the test has been adequately demonstrated by several workers (see van Rooyen, 1933–4 ; Ogilvie and van Rooyen, 1933–4 ; Gow, 1934 ; and van der Hoeden and Hulst, 1934), and consequently no further reference need be made to this aspect of the subject in the present paper.

Although the encephalitogenic effect in the rabbit of lymphadenomatous tissue appears to be a well-established fact, considerable dubiety exists with regard to the nature of the pathogenic agent present in this tissue. Gordon (1933) has suggested that the behaviour of this agent is analogous to that of certain viruses in man and animals. Van Rooyen (1934) has concluded that the effects produced in the rabbit resemble more those of toxic action than of a virus infection, and has also pointed out that inability to transmit the condition from rabbit to rabbit, and the absence of intracellular inclusion bodies and of any immunity reaction, renders it difficult to assign this encephalitogenic agent to the infective viruses.

Further light has been thrown on the problem by the work of Friedemann (1934), who showed that the effects in the rabbit of intracerebral inoculation of lymphadenomatous tissue may also be produced by the inoculation of emulsions of normal splenic tissue and bone marrow, and of normal leucocytes. He showed that similar materials derived from cases of acute leukaemia and pernicious anaemia may likewise yield the characteristic effects. The encephalitic reaction has been found to be particularly marked with a specimen of bone marrow derived from a case of acute myelogenous leukaemia in which there were also chloromatous changes (van Rooyen, 1934).

The question has therefore arisen whether the agent present in lymphadenomatous tissue is identical with that present in these tissues, and whether, as Friedemann points out, both agents can be identified with the proteolytic enzyme extracted by Jochmann and Lockemann (1908) from leucocytes, splenic tissue, and bone marrow.

Thus it has been clearly shown that the characteristic encephalitic syndrome can be produced by the intracerebral inoculation of a product derived from normal tissues and cells ; but, on the other hand, we have obtained evidence to show that the encephalitogenic agent in lymphadenomatous glands is not identical with Jochmann's enzyme, although both of them exhibit the same degree of resistance towards certain physical and chemical agents. We have also ascertained whether certain bacteria and vaccinia virus can withstand these agents.

The extraction and properties of the enzyme have been fully described by Jochmann and Lockemann (1908), and Jochmann (1913), and further reference has been made to its presence in tissues by Friedemann (1934). We have carried out a number of experiments with tissues extracted according to the method adopted by these workers for separating the ferment, and the extracts have been carefully examined for proteolytic properties and their ability to produce pathogenic effects when inoculated into the brain of the rabbit.

Technique for Extraction of Jochmann's Enzyme

We have employed the same method as was adopted by Friedemann (1934) for this purpose. It is as follows.

Tissue is weighed, placed in an oven at 55° C. for forty-eight hours, and 5 volumes of a mixture consisting of 2 volumes of absolute alcohol to 1 volume of ether added. After twenty-four hours at room temperature the supernatant fluid is discarded and the residue desiccated to dryness *in vacuo*. The desiccate is thereafter triturated in a 50 per cent. aqueous solution of glycerol, allowed to stand for twenty-four hours at room temperature, centrifugalized at 2,500 revolutions per minute for twelve minutes, and the supernatant fluid withdrawn with a sterile pipette and added to an alcohol-ether mixture of the previous proportions. After twenty-four hours at room temperature the precipitate is removed by centrifugalization, resuspended in 2 to 3 c.cm. of 0.86 per cent. saline, and used for injection.

The alternative method (advocated by Friedemann, 1934) for the extraction of the enzyme by the use of acetone and filter paper was also tried, and found to give similar results. Unextracted tissue emulsions were also used for inoculation experiments; these constituted 1 in 10 suspensions obtained by

* By aid of grants received from the Science Committee of the British Medical Association and the Medical Research Council.

finely mincing and grinding material in broth of *p*H 7.1 and thereafter allowed to stand for seven days in the ice-chest prior to injection. As a precautionary measure against bacterial contamination those tissues which had been obtained at necropsy were initially subjected to the superficial application of heat and alcohol and then triturated in 0.5 per cent. phenol broth according to the method described by van Rooyen (1933). In some cases the broth emulsions were also heated at 60° C. for sixty minutes to exclude all possibility of bacterial contamination.

The technique used for intracerebral inoculation of rabbits was similar to that described by van Rooyen (1933), and, stated briefly, consisted of injecting 0.4 c.cm. of tissue emulsion into the occipital lobe of the animal to a depth of 3 mm. from the skin surface. The site chosen for perforating the skull was approximately 2 mm. equidistant from the right (or left) lambdoidal suture postero-laterally and the sagittal suture medially.

Interpretation of Results

Only those animals which exhibited the characteristic syndrome described by Gordon (1932) have been regarded as yielding positive results. The features of this condition are well known and require no further description, but we would emphasize that the incubation period of three to four days prior to the development of the syndrome and the absence of any cultivable bacterium in the brain of such an affected animal are perhaps the most striking features of the encephalitic condition. We would also like to place on record that "spasmodic contractions of the muscles of the neck, distorted position of the head, frequent rotations around the body axis" (Friedemann and Elkeles, 1933) are not a characteristic feature of Gordon's syndrome. In our experience, gleaned from the results of intracerebral inoculation in over 1,000 rabbits, such signs are the outcome of brain injury.

Effect of the Jochmann-Lockemann Method Applied to Histologically Typical Glands

Twelve enlarged lymphatic glands removed from cases of clinically and histologically characteristic Hodgkin's disease, which had given a positive reaction on intracerebral inoculation, were treated by the Jochmann-Lockemann method and then tested in the same way. On every occasion the product obtained after extraction produced the same effect in the rabbit as was noted with freshly emulsified suspensions of similar tissue. In the case of two freshly removed glands which yielded a weakly positive effect when emulsified in broth, an appreciably greater reaction in the animal was elicited after extraction. But the feebly enhanced effects of concentration by this method were not as great as that obtained with broth emulsions prepared from similar glands which had been first subjected to desiccation. The experiments have, however, demonstrated that the encephalitogenic agent is capable of withstanding consecutively 55° C. for forty-eight hours, alcohol (2 volumes) and ether (1 volume) for forty-eight hours, and 50 per cent. glycerol for twenty-four hours' duration.

EXPERIMENTS ON LYMPH GLANDS FROM TYPICAL CASES YIELDING A NEGATIVE BIOLOGICAL TEST

Elsewhere van Rooyen (1933) has pointed out that this test was negative in 25 per cent. of cases of clinically and histologically characteristic Hodgkin's disease. It was, moreover, suggested that the absence of the reaction in such cases may possibly have been due to the effects of repeated irradiation or excessive fibrosis of the glands examined. Further work has been done on this aspect of the subject, and an attempt made to ascertain whether the extracts obtained from negatively reacting glands by the Jochmann-Lockemann procedure may yield positive reactions.

Six enlarged Hodgkin lymph nodes of over 2 mg. in weight, which had previously given a negative reaction, were extracted by the Jochmann-Lockemann technique, and the extract was injected intracerebrally into rabbits. Fifteen rabbits were injected with such emulsions, and the dosage varied from 0.5 to 1 c.cm. in size, but, in spite of the employment of such comparatively large amounts, no effects were produced. These results have indicated that the preliminary application of the Jochmann-Lockemann technique to lymphatic glands giving a negative biological test fails to extract an encephalitogenic product from them.

Examination of Lymphatic Glands affected with Lymphadenoma and other Pathological Conditions

In order to ascertain whether Gordon's syndrome is due to Jochmann's proteolytic enzyme, we have investigated a number of lymphatic glands affected with a variety of different diseases, including Hodgkin's disease, for the presence of this enzyme. Thus twenty-four enlarged lymphatic glands have been examined for proteolytic action on coagulated serum (see Müller and Jochmann, 1906) in gelatin and litmus milk, and the results tabulated as follows.

TECHNIQUE

This test consisted in placing a large loopful of the tissue extract (vide supra) on the surface of a Petri dish containing Loeffler's coagulated serum medium which was incubated for forty-eight hours at 55° C., and then examined for liquefaction. Positive results were signified by the formation of a crateriform area of depression with liquefaction at the site of addition to the medium (see Müller and Jochmann, 1906).

To 5 c.cm. of litmus milk medium 1 to 2 c.cm. of the tissue extract was added, which was then incubated at 55° C. for three days. In the case of post-mortem material

TABLE I.—*Examination of Lymphatic Glands for Jochmann's Enzyme correlated with Pathogenic Effect on Intracerebral Inoculation of Tissue Emulsions and Tissue Extracts*

Case	Histology	Result of Intracerebral Inoculation of		Proteolytic Action of Extracts on	
		Broth Emulsion (Gordon Syndrome)	Extract prepared by Jochmann-Lockemann Method	Loeffler's Serum	Litmus Milk
H 12	Hodgkin's disease	Positive	Positive	No liquefaction	No change
H 18	" "	"	"	"	"
G	" "	"	"	"	"
H 40	" "	Strongly positive	Negative	"	"
E	" "	Negative	"	"	"
J	" "	Positive	Positive	"	Slight acidity
NH 2	" "	Negative	Negative	"	No change
NH 3	" "	"	(?) Positive	"	"
F	Case clinically resembling lymphadenoma but unconfirmed on histological examination, and no diagnosis given	"	Negative	"	"
C		"	"	"	"
D		"	"	"	Acid with digestion of milk
G 2	Reticulosarcoma	"	"	"	No change
NH 7	"	"	"	"	"
LL 2	Lymphatic leukaemia	"	"	"	"
LL 3	" "	"	"	"	"
LL 4	" "	"	"	"	"
NH 8	Secondary carcinoma	"	"	"	"
I	" "	"	"	Large area of liquefaction	Acid with digestion of milk
C	Undifferentiated carcinoma	"	"	"	Slight acidity
H	Caseating tuberculosis	"	"	"	No change
F	" "	"	"	"	"
B	Chronic tuberculosis	"	"	"	"

TABLE II.—*Results obtained with Spleen and Bone Marrow*

Case	Pathological Condition	Tissue	Intracerebral Inoculation of Broth Extract	Intracerebral Inoculation of Jochmann Extract	Proteolytic Action of Jochmann Extract on		
					Loeffler's Serum	Litmus Milk	Gelatin
B (W.G.H.)	Myelogenous leukaemia	Bone marrow	Positive	Negative	Liquefaction	No action	—
B (W.G.H.)	" "	Spleen	"	Positive	No liquefaction	"	—
LL 1	Lymphatic leukaemia	Bone marrow	"	Negative	"	"	—
LL 2	" "	"	Negative	"	Liquefaction	"	—
LL 2	" "	Spleen	Positive	"	Slight liquefaction	Marked activity	—
LL 3	" "	Bone marrow	Negative	"	No liquefaction	No action	—
LL 3	" "	Spleen	Positive	Positive	Active liquefaction	Marked activity	—
LL 4	" "	Bone marrow	Negative	Negative	No liquefaction	No action	—
LL 4	" "	Spleen	"	"	"	"	—
A	Removed at necropsy from patients dying of various conditions, none of which were blood diseases	"	Positive	Positive	Liquefaction	"	—
B		"	"	Negative	No liquefaction	"	Negative in acid, neutral, and alkaline media
C		"	"	Positive	"	"	
D		"	"	"	"	"	

the presence of bacterial contamination was excluded by appropriate methods of examination as a precautionary measure. The slightest trace of redness in the indicator as compared with the uninoculated control was regarded as a positive result, and the appearance of marked acidity with digestion of the milk was interpreted as a strongly positive reaction. Then 0.5 c.cm. of tissue extract was added to a tube containing 2.5 c.cm. of gelatin, incubated at 55° C. for forty-eight hours, and allowed to stand for one day at room temperature (15° to 20° C.). The amount of liquefaction produced was measured by means of a calibrated pipette, and any bacterial growth was excluded by cultural examination. The results obtained were found to be identical with those noted in the case of coagulated serum, and consequently they have not been incorporated in the tables.

The findings in Table I indicate that Jochmann's enzyme is absent in lymphadenoma and the other conditions studied. They also show that the encephalitogenic action of Hodgkin lymph nodes cannot be identified with Jochmann's enzyme; thus several glands were found to be markedly encephalitogenic, but possessed no apparent proteolytic activity. From the results obtained with splenic and bone marrow tissue (Table II) it will be observed that though the broth extracts generally reproduced the encephalitic syndrome, the corresponding extracts obtained by the Jochmann-Lockemann method were by no means always active. Further analysis of the results reveals that there was no relation between proteolytic activity on the one hand and encephalitogenic effect on the other. From these experiments we have concluded that the encephalitogenic agent which occurs in lymphadenomatous lymphatic glands also occurs in the spleen and bone marrow.

TABLE III.—*Pus Cells* and Normal Leucocytes*

Case	Clinical Condition	Intracerebral Inoculation of Broth Extract	Intracerebral Inoculation of Jochmann's Extract	Proteolytic Action of Jochmann's Extract on	
				Loeffler's Serum	Litmus Milk
1	Pyogenic skin abscess	Positive	Negative	Active liquefaction	Very slight action
2	" "	"	"	Liquefaction	No action
3	" "	"	Positive	Active liquefaction	Slight action
4	" "	"	"	"	Marked action
5	" "	"	Negative	Liquefaction	"
6	" "	"	"	"	Very marked action
7	Normal leucocytes†	"	Positive	"	Marked action

* Sterilized by heating at 60° C. for sixty minutes.
† Obtained by differential centrifugalization of normal human blood which had been citrated.

Our experiments with human pus and leucocytes have confirmed the early work of Müller and Jochmann (1906), who drew attention to the marked proteolytic activity of polymorphonuclear leucocytes derived from normal blood and inflammatory exudates. It will again be observed, however, that there was no correlation between proteolytic activity and encephalitogenic effect; thus in four cases the Jochmann-Lockemann extracts were found to be non-pathogenic to the rabbit, but possessed definite proteolytic powers. Further, this method of extraction proved detrimental to the pathogenic agent, since only three out of seven cases yielded a positive result with Jochmann-Lockemann extracts, whereas positive results were obtained in all cases by the use of broth extracts. Similar results have been noted by Gordon (1934).

TABLE IV.—*The Pancreas*

Case	Intracerebral Inoculation of Broth Extract	Intracerebral Inoculation of Jochmann Extract	Proteolytic Activity of Jochmann Extract on	
			Loeffler's Serum	Litmus Milk
1	Negative	Negative	Marked liquefaction	Slight action
2	"	"	" "	"
3	"	"	Liquefaction	Marked action
4	"	"	Marked liquefaction	"
5	"	"	Liquefaction	"
6	"	"	Marked liquefaction	"
	"	"	" "	"

Müller and Jochmann (1906) state that "pancreas induces the quickest and by far the most intensive digestive action on Loeffler's serum at 55° C." In our experiments with human pancreatic tissue we found that, while the Jochmann-Lockemann extracts induced active proteolysis on Loeffler's serum and in litmus milk, in no instance did the characteristic syndrome described by Gordon appear in the rabbits injected with this material. On several occasions when injections of 0.6 c.cm. were given intracerebrally, the animals died either immediately or within forty-eight hours with signs of paralysis which rapidly developed within five hours of the injection. Reduction of the amount injected to 0.3 to 0.4 c.cm. gave uniformly negative results, the animals remaining unaffected by such dosages. A 1 in 10 concentration of pepsin solution (*B.P.*) in 0.2 per cent. hydrochloric acid, and in neutral solution, was also injected intracerebrally into rabbits, but no significant changes were observed.

In Vitro Effect of Human Tissue Extracts on Rabbit Brain Tissues

Friedemann (1934) has drawn attention to the lytic action of Jochmann-Lockemann extracts of spleen and bone marrow on emulsions of rabbit brain as a possible interpretation of the occurrence of Gordon's syndrome in the rabbit. We have investigated this action in the following manner.

The brains of several rabbits were removed aseptically and ground up in an equal quantity of normal saline to make a dense uniform emulsion ; 4.5 c.cm. amounts of this emulsion, together with 0.5 c.cm. of extracts of various tissues obtained by the Jochmann-Lockemann method, were placed in sterile stoppered tubes and incubated at 55° C. for three days. The control consisted of 4.5 c.cm. brain emulsion with 0.5 c.cm. normal saline.

TABLE V.—*In Vitro Effect of Tissue Extracts on Rabbit Brain Tissue*

Material	Result of Intracerebral Injection of Extract in Rabbit	Effect on Brain Emulsion after		
		24 Hours	48 Hours	72 Hours
Gland affected with lymphadenoma	Positive	Nil	Nil	Nil
Gland affected with lymphosarcoma	Negative	"	"	"
" "	"	"	"	"
Normal pancreas ...	"	Progressive liquefaction		
" "	"	"	"	
Control	—	Nil	Nil	Nil

In those tubes containing pancreatic extract there was progressive digestion, whereas in the tubes containing extracts of lymphadenomatous and lymphosarcomatous glands and in the control tube no such change had occurred after incubation. This result shows quite clearly that gross proteolytic action on the brain plays no part in the effect produced by Gordon's agent.

Experiments with Lymphoprotease and Leucoprotease

It has been stated by Jochmann, and subsequently alluded to by Friedemann, that Jochmann's proteolytic enzyme is also to be found in the spleen, bone marrow, and leucocytes of normal dogs. Opie (1905–6–7) has studied the proteolytic property of dog tissues in great detail, and has shown that such activity is attributable to the presence of two proteolytic enzymes. The first, derived from the polymorphonuclear leucocytes and acting in an alkaline or neutral medium, he has called "leucoprotease." The second, which he termed "lymphoprotease," is derived from the mononuclear macrophages, and acts in an acid medium.

We have been able to confirm these observations, and have investigated the possible encephalitogenic action of the two enzymes when injected intracerebrally into the rabbit.

TECHNIQUE

Opie's method of obtaining the two enzymes has been used, and is briefly as follows. A healthy dog was injected intrapleurally on each side with 10 c.cm. of a 10 per cent. suspension (by weight) of aleuronat in a 3 per cent. solution of starch. An inflammatory reaction ensued and a pleural exudate formed. After two days part of this exudate was withdrawn with needle and syringe. At this stage the cellular content of the exudate consisted mainly of polymorphonuclear leucocytes, and, as Opie has shown, contained the enzyme leucoprotease. At the end of six days from the date of inoculation the dog was killed and the pleural exudate removed. Microscopically its cellular content consisted of a high percentage of large mononuclear cells. The lymph glands adjacent to the site of inflammation—for example, the substernal glands—were markedly enlarged, and microscopical examination showed that the sinuses were crowded with large mononuclear cells. The cells of the pleural exudates were separated by centrifugation, washed with normal saline, and finally suspended in nine times their volume of 0.85 per cent. saline. The lymph glands were thoroughly minced and triturated with three times their volume of 0.85 per cent. saline. All three suspensions were placed at 55° C. for twenty-four hours, and then tested for their proteolytic and encephalitogenic activity.

TABLE VI.—*Experiments with Tissue Enzymes from Dogs*

Nature of Specimen	Encephalitogenic Action in Rabbit	Proteolytic Action on				
		Loeffler's Serum	Gelatin			Litmus Milk
			0.2 % Acetic Acid	Neutral	0.2 % Na_2CO_3	
Pleural exudate after 2 days	Nil	+++	Complete liquefaction	Complete liquefaction	Complete liquefaction	—
Pleural exudate after 6 days	"	+++	"	"	Slight liquefaction	—
Glands	"	++	"	"	Complete liquefaction	—
Bone marrow I	"	++	—	++	—	++
Bone marrow II	"	++	—	++	—	++
Normal leucocytes	"	++	—	++	—	++

The exudates were found to be innocuous when introduced into the brain of the rabbit. In the case of the gland emulsion, however, results were obtained similar to those described with extracts of human pancreas (vide supra). Thus intracerebral injection with 0.5 c.cm. of a 1 in 3 concentration of gland emulsion caused paralysis and death within twenty-four hours, but if the dose were diminished to 0.25 c.cm. the rabbit remained unaffected. These results show, therefore, that no relation exists between the encephalitogenic agent under discussion and the enzymes leucoprotease and lymphoprotease described by Opie. Likewise, emulsions of spleen and bone marrow, and extracts of these tissues obtained by the Jochmann-Lockemann method, were actively proteolytic, but non-pathogenic to the rabbit.

Resistance Exhibited by Certain Bacteria to the Jochmann-Lockemann Methcd of Tissue Extraction

It has been stated by Friedemann (1934) that the procedure adopted for the extraction of Jochmann's enzyme from tissues was adequately rigorous for the destruction of most forms of micro-organic life which might have been present in tissues before treatment by this method of extraction. We have investigated the precise degree of lethal effect exerted by such extraction when applied to a variety of different bacteria, and have noted that certain organisms resist such treatment.

TECHNIQUE

Aerobic five-day cultures of *B. proteus, B. pyocyaneus, B. anthracis, B. anthracoides, B. mycoides, Streptococcus faecalis, Staphylococcus aureus* and *albus,* together with anaerobic cultures of *B. tetanus, B. botulinus, B. sporogenes,* and *Vibrion septique* were treated as follows: placed in a paraffin oven at 55° C. for three days ; centrifugalized at 3,000 revolutions per minute for thirty minutes ; the supernatant fluid pipetted off ; 15 c.cm. of a mixture composed of 2 volumes alcohol to 1 volume ether added, and allowed to stand at room temperature for twenty-four hours ; thereafter tubes were recentrifugalized ; the alcohol-ether mixture discarded and replaced with a 50 per cent. aqueous solution of glycerin, which was next allowed to act for a further twenty-four hours at room temperature, and then removed by differential centrifugalization. The deposited organisms were again subjected to a final treatment by alcohol and ether, and then resuspended in saline solution.

The presence of living organisms in each case was next ascertained by inoculation of blood-agar plates, which

were incubated under appropriate conditions and then examined for the presence of typical colonies. The following results were obtained: *B. anthracis*, *B. anthracoides*, and *B. mycoides*, abundant growth after thirty-six hours; *B. sporogenes* and *B. botulinus*, numerous colonies at the end of seventy-two hours; *B. tetani*, *Vibrion septique*, *Enterococcus*, *Staphylococcus aureus*, and *Staphylococcus albus*, a few colonies after the same length of time. It should be mentioned in connexion with experiments on cocci that dense bacterial emulsions suspended in the minimum quantity of saline were used. A considerable amount of drying thus occurred during heating at 55° C. for forty-eight hours, similar to that which resulted when tissues were placed under identical conditions. As far as could be ascertained, therefore, from our observations, the survival of staphylococci following exposure to the Jochmann-Lockemann method of extraction was dependent on the degree of drying to which these organisms were initially exposed. *B. proteus* and *B. pyocyaneus* failed to withstand the extraction process, and no growth was obtained after attempted cultivation. Likewise, similar results were obtained with an active strain of vaccinia virus, which was inactivated by this treatment.

These findings indicate that the method of Jochmann-Lockemann extraction is not necessarily lethal to organismal life, certain bacteria, both sporing and non-sporing, being able to survive the procedure.

Discussion

Three different hypotheses have been advanced in an attempt to explain the production of the encephalitic syndrome in rabbits following the intracerebral inoculation of extracts of certain human tissues. Gordon (1933–4) has suggested that the pathogenic agent belongs to the virus category; van Rooyen (1934) that it is possibly a neurotoxic substance with special affinity for rabbit brain tissue; while Friedemann (1934) concluded that it is identical with Jochmann's proteolytic enzyme. The last-mentioned worker arrived at this conclusion after a study of its distribution in the human body and of its resistance to certain chemical substances. This theory has formed the subject of our investigations.

F. Müller (1888), and later E. Müller and Jochmann (1906), noted that a proteolytic enzyme was present in human leucocytes, spleen, bone marrow, and pancreas, and in pus. Jochmann (1906) further demonstrated that it was present in these organs in the monkey, and to a lesser degree in the dog. They found that it could be effectively demonstrated by its ability to liquefy coagulated serum, a drop of the enzyme solution placed on Loeffler's serum medium producing a crateriform depression after incubation at 55° C. From their studies on the comparative proteolytic properties of white blood cells derived from cases of lymphatic and myelogenous leukaemia they came to the conclusion that in so far as leucocytes were concerned the proteolytic action was due to a ferment produced by the polymorphonuclear leucocytes.

The enzymes derived from leucocytes have been carefully studied by Opie (1905–6) in the dog. He found that two distinct enzymes were present. The first of them he names "leucoprotease," and states that it acts in a neutral or alkaline medium. This appears to be the enzyme described by Jochmann *et al.*, as it can be obtained from pus and withstands dehydration by alcohol and ether and extraction by glycerin. It resembles trypsin, but is less active. The other enzyme, which he calls "lymphoprotease," was obtained from the large mononuclear cells of lymph glands and inflammatory exudates—the macrophages of Metchnikoff. This enzyme, unlike leucoprotease, digests with greatest activity in an acid medium, being almost entirely inactive in neutral or alkaline media. It differs from leucoprotease further in that it is less resistant to the action of heat, being largely inactivated by temperatures between 60° and 70° C., and in being destroyed by drying after treatment with alcohol and ether. Hedin and Rowland (1901) demonstrated the presence of proteolytic substances in the spleen of various animals (ox, sheep, horse, and the pig); and Hedin (1904) succeeded in isolating two proteolytic enzymes: one, which acted in an alkaline medium, he termed "lieno-α-protease"; and the other, which acted in an acid medium, he called "lieno-β-protease."

The results recorded in this paper indicate, in the first place, that the encephalitogenic action of extracted leucocytes and other tissues on the brain of the rabbit is not due to proteolytic action *per se*, as extracts of human pancreas which were actively proteolytic were incapable of reproducing the characteristic syndrome in the rabbit. This result with pancreatic extracts further indicates that a lipolytic ferment plays no part in the production of the syndrome.

The question then arose as to whether the pathogenic action in the rabbit was due to a specific proteolytic enzyme, associated with the cells of the various tissues exhibiting encephalitogenic properties. A study of the various enzymes described by Müller and Jochmann, Opie, and Hedin in these tissues led us to the conclusion that none of these enzymes could be regarded as Gordon's encephalitogenic agent. For example, various Jochmann-Lockemann extracts of Hodgkin lymph glands, which yielded a strongly positive encephalitogenic action, were apparently devoid of proteolytic activity according to the standards adopted. The same was true of several specimens of bone marrow and spleen when tested in alkaline, acid, and neutral media respectively. On the other hand, several Jochmann-Lockemann extracts of pus which were actively proteolytic contained no encephalitogenic agent. Likewise, in material derived from the normal organs and inflammatory exudates of dogs, proteolytic enzymes, active in acid, neutral, and alkaline media, were obtained; but these proved to be incapable of producing the typical syndrome in the rabbit.

We do not propose in this communication to enter into a discussion of the neutralizing properties of normal serum on the enzymes and pathogenic agent under discussion. We would draw attention to the fact, however, that whereas Gordon's agent, derived from lymphadenomatous glands, does not appear to be readily neutralizable, the anti-ferment action of normal serum is well recognized. Opie (1907) has further shown that leucoprotease is easily neutralizable by such serum. This aspect of the subject is in course of investigation, and will be referred to at a later date. The question of the vital nature of the encephalitogenic agent in the light of its resistance to a somewhat drastic mode of treatment has also been investigated. Comparative experiments with a number of different bacteria have led us to the conclusion that its resistance to the Jochmann-Lockemann procedure does not necessarily exclude the possibility of its being a living organism.

After full consideration of the foregoing experimental data we have concluded that Gordon's agent is not identical with Jochmann's enzyme. Neither is it identical with the several proteolytic enzymes described by Opie, Hedin, and their co-workers. Further, it is of importance to note that the property of leucocytes to produce encephalitis in the rabbit appears to be limited to the human subject among various animal species which we have examined. It is still impossible, however, to define this unique pathogenic principle, and further work might appropriately be directed towards obtaining a more exact definition of its true nature and mode of action.

Summary and Conclusions

1. Gordon's encephalitogenic agent originally derived from lymphadenomatous tissue may occur in human bone marrow, spleen, and leucocytes (whether normal or pathological), but not in those of the dog or the rabbit.

2. This agent is capable of withstanding the Jochmann-Lockemann procedure for the extraction of proteolytic enzymes from tissues.

3. Extracts of certain tissues obtained by this procedure may be highly pathogenic to the rabbit on intracerebral inoculation (encephalitogenic) but devoid of proteolytic action.

4. Conversely, extracts of certain tissues may be markedly proteolytic, containing the so-called Jochmann ferment, but quite non-pathogenic to the rabbit.

5. Gordon's pathogenic agent found in lymphatic glands affected with Hodgkin's disease cannot, therefore, be identified with Jochmann's proteolytic enzyme.

6. Lymphatic glands affected with a variety of different pathological conditions have been subjected to the Jochmann-Lockemann method of extraction, but it has not been found possible to derive an encephalitogenic product from these glands which initially gave a negative Gordon reaction.

7. Experiments with certain bacteria have demonstrated that this method of chemical extraction does not destroy all forms of living organisms.

8. The enzymes lymphoprotease and leucoprotease obtained from the dog, and also lieno-α-protease and lieno-β-protease, do not appear to be concerned in the production of the encephalitic syndrome following the intracerebral inoculation of tissue extracts.

We desire to acknowledge our indebtedness to Professor T. J. Mackie for much constructive criticism and valuable advice received during the course of the investigations, also to Dr. Mervyn H. Gordon of St. Bartholomew's Hospital, London, for the interest which he has taken in our work.

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L. W. Sauer (*Amer. Journ. Dis. Child.*, January, 1935, p. 69) has treated 650 non-immune infants and young children by a vaccine which differed from all other pertussis vaccines in being made every few months from recently isolated haemolytic strains of the Bordet-Gengou bacillus. The total dosage after 6 months of age was 8 c.cm. Local and systemic reactions were negligible. Thirty-two children used as controls in twenty-five of the families contracted undoubted pertussis, whereas 170 of the injected children in these families who had been exposed escaped. No claims are made for the vaccine as a therapeutic agent, nor when exposure has already occurred or threatens, as the immunization takes about four months to develop.

SEROLOGICAL DIAGNOSIS OF WEIL'S DISEASE

BY

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Considerable attention has recently been paid to certain outbreaks and sporadic cases of Weil's disease in the British Isles. As the laboratory diagnosis by serological methods is somewhat specialized, and an early and definite diagnosis is of extreme importance, a description of the procedures may possibly be of use to those wishing to carry out serological tests for this disease.

Agglutination Test

I shall only refer briefly to this test, which has been perfected by Professor Schüffner (1934) and his co-workers in Amsterdam. It consists essentially of allowing varying concentrations of the patient's serum to interact for two hours at 32° C. with an equal volume of a young culture of *L. icterohaemorrhagiae*. After incubation small drops from the various dilutions are placed on a slide and are examined, without a cover-slip, by dark-ground illumination.

One factor which may make the results difficult to read when using living cultures is that lysis of the leptospira occurs in certain dilutions, and the result is consequently masked. In order to overcome this difficulty Professor Schüffner has, for the last two years, been using formolized cultures; with these no lysis occurs, but there is a tendency for acid agglutination to take place unless the strength of the pure formalin in the suspension is reduced to 0.5 per cent.

According to Postmus (1933) a positive agglutination reaction may be expected on the sixth day of disease. The reaction reaches its maximum on the twentieth day, when the titre of the serum may rise to 1 in 100,000. Control sera in Schüffner's hands have not shown positive agglutination even at a 1 in 10 dilution. Residual agglutinins may persist for several years: Postmus has demonstrated their presence 6,066 days after the onset of the disease, and in one of the cases recorded by Fairley (1934) agglutinins were shown to be present twelve and a half years after recovery.

The Adhesion Test

In many ways the results of this test are easier to read than the agglutination reaction, and it can be performed more rapidly. Its history is briefly as follows. A number of observers (Laveran and Mesnil, 1901; Rieckenberg, 1917; Brussin, 1925; and Kritschewski and Tscherikower, 1926) had drawn attention to the fact that particles such as bacteria or blood platelets would become adherent to trypanosomes and spirochaetes in the presence of immune sera. Brown and Davis (1927) applied this as a means of differentiating serological types of leptospira, and proposed the name of the adhesion test.

The questions now arise whether this test is specific and sensitive, and whether the reaction persists for some time after the disappearance of the symptoms of the disease. As regards the specificity of the test, we had no difficulty whatever in differentiating *L. biflexa* from *L. icterohaemorrhagiae* on the one hand, and *L. hebdomadis* on the other. We were also able to prove by means of this reaction that five strains of *L. icteroides* which Noguchi (1925) maintained were the cause of yellow fever and were morphologically and serologically distinct from *L. icterohaemorrhagiae*, were indistinguishable from the

latter. In studying the serology of certain patients in the Andaman Islands suffering from jaundice I found (Brown, 1928) that the serum gave a positive adhesion test with two strains of leptospira, Rachmat and Deli A, both from Sumatra, but not with another Sumatra strain nor with certain Dutch and English strains. It would appear, therefore, that the test is distinctly specific. It does not show any tendency to split up into subtypes types which have been determined by other serological methods—for example, protection tests in animals or agglutination. In other words, the adhesion test is neither more nor less specific than other serological tests.

As regards the length of time that these adhesion antibodies remain after the patient has recovered from the disease, in the sera which Dr. Hamilton Fairley kindly placed at my disposal I have been able to demonstrate adhesion to high titre in serum taken as long as eight and a half years after the disease. The sensitivity of the test is shown in the table, where in each case the total concentration of the serum at which adhesion and agglutination have been observed in various sera is noted. It will here be seen that adhesion disappears approximately at the same dilution as represents the end-point of agglutination.

Positive reaction.

Negative reaction.

The adhesion test as applied to leptospira.

A	B	1 in 10	1 in 30	1 in 100	1 in 300	1 in 1,000	1 in 3,000	1 in 10,000	1 in 30,000	1 in 100,000	C	D
M	Agg	+	+	+	+	+	–	–	–	–	1½ years	1 in 1,000
	Adh	+	+	+	+	–	–	–	–	–		
S	Agg	+	+	–	–	–	–	–	–	–	1 year	? 10
	Adh	+	+	–	–	–	–	–	–	–		
CG	Agg	+	+	+	+	+	–	–	–	–	2 years	1 in 1,000
	Adh	+	+	+	+	–	–	–	–	–		
G	Agg	+	+	–	–	–	–	–	–	–	5¾ years	1 in 30
	Adh	+	+	+	–	–	–	–	–	–		
P	Agg	+	+	+	+	–	–	–	–	–	8½ years	1 in 100
	Adh	+	+	+	+	–	–	–	–	–		
V	Agg	+	+	+	+	+	+	+	+	–	During convalescence	Not done
	Adh	+	+	+	+	+	+	+	+	–		
B	Agg	+	+	+	+	+	+	+	+	–	ditto	1 in 30,000
	Adh	+	+	+	+	+	+	+	+	–		

Column A: Code initials of various patients.
Column B: Agg = Agglutination. Adh = Adhesion.
Column C: Interval which elapsed between the onset of the disease and the date of testing the serum.
Column D: Professor Schüffner's record of agglutination titre six months previously.

In this table, column C, is also shown the time which has elapsed between the onset of the disease and the date upon which the serum was tested. It is interesting to note in this connexion that the titres which I obtained for agglutination were almost identical with those found by Professor Schüffner for the first five sera that he examined six months previously (column D). In two cases my results show a slightly higher titre. This is probably due to the fact that I allowed interaction between the serum and formolized culture to take place for twenty-four hours at room temperature, instead of the four to twelve hours employed by Schüffner when using formolized cultures.

Technique of the Adhesion Test

The following reagents are required: (1) the patient's serum; (2) a young broth culture of *L. icterohaemorrhagiae*; (3) a saline suspension of a young culture of *B. coli* or other similar organism; (4) a fivefold dilution in saline of fresh guinea-pig's serum (this is not required if the patient's serum is tested on the same day as the sample is taken).

One volume (about 20 c.mm.) of each of the above reagents is placed in a small agglutination tube and the contents mixed; a control tube contains known normal serum in place of the patient's serum. The tubes are incubated at 37° C. for thirty minutes, and then a small drop is placed on a microscope slide, covered with a coverslip, and examined by dark-field illumination. In the event of a negative reaction the leptospira will be seen swimming freely and totally unimpeded by the presence of bacteria. In a positive reaction the bacteria will be seen to be firmly adherent to the leptospira. Not all the leptospira will be affected in this way, but only a certain proportion, unless the serum is of a very high titre.

At least twenty leptospira should be observed before a negative result is recorded. It may be that one or more bacteria, in a positive reaction, will adhere to the end of the organism, and no amount of movement on the part of the leptospira will dislodge them. Other leptospira will be seen almost completely covered with bacteria, with only the terminal portions still in sight. The reaction is very dramatic, and no difficulty should be experienced in reading the results.

What occasionally happens with a negative serum is that a leptospira may be seen more or less in the centre of a small clump of bacteria. In this case it will be noticed that it is not adherent to the bacteria, but slides in and out of the bacterial clump—a totally different state of affairs from that in which there is true adhesion. When there is a positive reaction with the patient's serum a second test can be made, using dilutions of serum which will give total concentrations up to 1 in 30,000. Owing to the small number of cases of Weil's disease in this country it is impossible to state the exact day of disease upon which the reaction appears, but it certainly is very marked at the end of the second week, and there is little reason to believe that it will not appear as early as the sixth day, as in the agglutination reaction.

The culture medium used in the adhesion test is a modification of that recommended by Fletcher (1927), and is as follows: distilled water, 3 c.cm.; lemco broth, 0.5 c.cm.; inactivated rabbit's serum, 0.25 c.cm. The culture is incubated at 32° C. for six days. It is preferable to use a strain which has lost its pathogenicity. In a series of wild rats examined by Brown and Davis (1927) adhesion antibodies to *L. icterohaemorrhagiae* were found in 36 per cent.; on this occasion no attempt was made to titrate the serum. In the last two wild rats recently examined the adhesion titre was 1 in 3,000 and 1 in 1,000, with agglutination titres of 1 in 3,000 and 1 in 300 respectively. Leptospira were not found in the kidneys of either of these rats.

I should like to express my thanks to Dr. Hamilton Fairley for placing five of the sera investigated at my disposal; to Professor T. R. Elliott and Dr. Wolstencroft for the other two sera; and to Professor Schüffner for his kindness in sending me full details of the technique of his agglutination test; also to Dr. Paul Fildes for his permission to reproduce the figure from the *British Journal of Experimental Pathology*.

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HEREDITY AND MENTAL DEFICIENCY*

BY

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Those members of the medical profession who are not familiar with the science of genetics and its application to human beings may not unreasonably ask why it is not sufficient to collect a large number of pedigrees of mental defectives, and, having analysed them, settle the problem of heredity and mental deficiency once and for all. This paper attempts to explain why this simple procedure does not, and cannot, provide all the necessary information.

Diversity of Views Held To-day

In spite of the numerous researches carried out on this subject, very divergent views are held by different authorities. For example, Professor McNeill[1] recently published a paper in the *British Medical Journal* entitled "Heredity a Minor Factor in Mental Deficiency." As a contrast, a passage may be quoted from the article on mental deficiency by Dr. Rudolf Pintner in the *Handbook of Child Psychology*.[2] "The great majority of feeble-minded individuals are simply born that way. They occur in families where feeble-mindedness or neuropathic conditions are common. No causal factor can be discovered. There may be secondary or aggravating factors, but not sufficient to cause feeble-mindedness. We therefore say that feeble-mindedness is inherited. The percentage of such inherited cases is put at about 90 by Hollingworth and about 80 by Tredgold. Amentia caused by disease or accident is therefore a relatively minor consideration.

The complete and final proof of a hereditary mechanism is the demonstration of Mendelian ratios. When inheritance is simple and uncomplicated, and when non-genetic influences are not operating effectively, this is an easy task experimentally, and not too difficult in the human subject. If mental deficiency were as simple as this the whole subject would have been settled long ago. Clearly, complexities exist that make genetical analysis much more difficult.

Mental Defectives Cannot be Sharply Separated from the Rest of the Population

The first difficulty is that mental defectives do not form a class that can be sharply distinguished from the rest of the population. The legal criterion is essentially one of social adaptation. Where precisely that line is drawn does not have any biological meaning. In terms of the closely related, but not identical, intelligence tests, the distribution of mentality is continuous. Where the line is drawn that separates normality from mental deficiency is arbitrary. Whatever criteria are adopted, therefore, a sharp line of division cannot be secured. Dullness and retardation shade off into mental deficiency.

This does not mean that in certain cases mental deficiency cannot be due to a simple genetic difference. The continuity of the distribution may be partly due to the way that intelligence is measured. It is more likely, however, that many defectives, especially those falling into the legally feeble-minded group, do represent the lower end of the ordinary curve of variability, just as individuals occur who differ from their fellows in being very short.

Lewis[3] has elaborated this conception, and terms those to whom it applies the "subcultural" group. This group is distinguished from those defectives in whom the mental state is the result of a definitely pathological condition, hereditary or otherwise. If, then, many defectives are to be regarded as extreme variants at the lower end of the curve of distribution of intelligence, it is clear that biometrical researches are required. Large numbers of individuals must be measured, and, in addition, it is not sufficient merely to contrast defectives and normals. Quantitative measurements are necessary, and the problem must be approached in the first instance by studying mentality in general—that is, all grades in the population. Biometrical studies on relatives are capable of yielding much information as to the part played by heredity in determining any characteristics that can be measured.

Mental Deficiency is not a Clinical or Genetic Entity

Another complication is due to the fact that the term covers a number of conditions, that may or may not be clearly distinguishable. Mental defectives have in common an underdeveloped and an ill-developed nervous system, but they show among themselves many differences both of kind and of degree in this state of underdevelopment. These differences are also found in mental defectives in regard to physical characteristics such as stature or size of head. Mental deficiency, then, is neither a clinical nor a genetic entity. It is not a genetic entity because it is found that there are genetic differences between groups selected in different ways. For example, it is generally accepted that those showing gross defect have fewer affected relatives than those with lesser degrees of abnormality. Mongols, too, differ from other defectives in having fewer affected relatives, and in addition the occurrence of mongolism shows a clear association with advanced maternal age.

Clinical and Genetic Entities are not Identical

It is important to recognize that clinical and genetic entities often do not correspond. For example, congenital stationary night-blindness may be inherited as a Mendelian dominant, as a recessive, or may be sex-linked. Clearly, therefore, at least three, and probably more, genetic factors exist, any one of which is capable of producing the same clinical end-result. It can be shown in other cases, such as albinism, that any one of several factors that show the same method of transmission may be responsible for the condition. Sometimes there are slight differences, constant for the family group, that indicate that different factors are at work in different cases. In two families that I had the opportunity of observing there were a number of members suffering from congenital cataract of the same type, and in both

* The substance of a paper read to the Maternity and Child Welfare Section of the Society of Medical Officers of Health, November 30th, 1934.

families inherited as a dominant. In one family, however, the age of onset was much less and the condition progressed much more rapidly. It is likely, however, that in addition to instances in which slight clinical differences indicate a genetic difference, there are many instances in which there are no corresponding clinical differences.

The Interaction of Genetic Factors, and the Interaction of Genetic and Non-genetic Factors

Genetic factors are often associated together in producing the end-result. For example, a comparatively rare gene may produce a condition, but there may also exist a relatively common gene (or genes) that can prevent the first factor from producing its effect. Similarly, non-genetic influences may inhibit the action of a genetic factor. In yet other instances other genetic or non-genetic factors may reinforce the action of the main gene. Instances of interaction of this kind may be of any degree of complexity. Ultimately we get multifactorial inheritance. This has already been mentioned as a likely mechanism in many cases of mental deficiency. It will usually be found that environmental, or, more strictly, non-genetic, influences are also at work. Perhaps the most usual case would be to find that the end-result is due to the action of unfavourable environmental influences acting upon the basis of a poor hereditary potentiality.

A Single Genetic Factor may have Diverse Clinical Results

If a genetic factor (or factors) is the essential condition for the appearance of a defect, and if its action can be modified in the way just described, it is to be expected that one and the same essential genetic mechanism may yield quite different end-results. Osler's disease (multiple telangiectasia) is very regularly inherited as a Mendelian dominant. In a typical case the characteristic angiomatous areas are seen, and the patient suffers from repeated epistaxis. Relatives, however, who undoubtedly possess the same factor may show few angiomas or even none, though they suffer from epistaxis. In other instances the only symptoms or signs are haemoptysis or haematuria. Progressive pseudo-hypertrophic polyneuritis is also a Mendelian dominant, but some relatives who possess the factor may have only absent deep reflexes or pes cavus.

In relation to mental deficiency it is impossible to deny the importance of what is termed "neuropathic diathesis." In one and the same family group are found mental defect, insanity, epilepsy, chronic alcoholism, and so forth. It is difficult to avoid the conclusion that there is an underlying weakness of the nervous system that is common to members of the family group, but that the particular manifestation depends on other things, either subsidiary genetic factors or non-genetic factors, or both.

Mental Deficiency as a Biological Problem

In the British Medical Association's report on mental deficiency[4] it was very properly pointed out that mental deficiency is as much a biological as a social problem.

To the biologist, then, reviewing the subject of mental deficiency with a view to research on its relation to heredity, the problem appears as follows. Mental defectives can be regarded either as the extreme minus end of the curve of distribution of intelligence or as the result of a definite abnormality in development, genetic or otherwise. The first conception applies more especially to high-grade cases and the second to low-grade cases. Amongst recognized defectives are to be found clinical differences, some fairly clear-cut, others allowing only a very partial separation into groups. Genetically we shall expect to find various types of inheritance, both simple and complex, heredity interacting with environment, and, finally, non-genetic cases. To complete a complex picture, while gross cases are readily distinguishable as abnormal, there is no biological line that separates the high-grade defective from the dull normal.

Perhaps it is only fair to say that some observers might maintain that the picture is simpler than this. They would hold that a relatively simple hereditary basis exists rather on the lines mentioned in connexion with neuropathic diathesis, and that it is largely due to imperfection of technique that defectives and normals cannot be simply contrasted. The essential underlying hereditary mechanism might be simple and the same in very many cases, and the apparent diversity grafted on afterwards. To express a personal opinion, I consider such a view much less likely to be true than the picture I have presented. Whether the complexity is real, as I think most probable, or largely apparent, much the same difficulties have to be faced, and the data must be collected in the same way.

Inadequacy of Pedigrees

It might still be asked why straightforward pedigree collection cannot provide much of the solution. The answer is that a single pedigree by itself cannot give a clear-cut answer except in very simple cases. A simple Mendelian dominant can often be recognized on the basis of a single large pedigree, and so can sex-linked inheritance. Recessive inheritance can rarely be deduced from a single pedigree, and then only with some degree of likelihood. In the same way the introduction of any complexities makes it almost impossible to secure clear-cut results from a single family. In one form or another families must be added together, but, unfortunately, in the case of mental deficiency we do not know what we are adding together.

Even in the most favourable case—the simple dominant—there are difficulties. Mental defect cannot usually be inferred with certainty about people who are dead. It is also necessary, if this simple hypothesis is to be tested, to know whether the "normals" in the family were really normal—that is, distributed something like the general population—or whether they were, on the average, mentally retarded. This last finding would make the simple dominant hypothesis very doubtful. It is difficult enough to classify adults even if they are seen, and practically impossible if they are not. The clear-cut and obvious physical deformity may lend itself to a greatly extended pedigree, and details of previous generations may be sufficiently accurate, but in mental deficiency the difficulties are far greater.

The Correct Approach

Much has undoubtedly been learnt in the past from the study of individual pedigrees, but greater advances may confidently be expected from the application of modern methods based on the integration of biometry and genetics. A line of investigation that is now especially required is the study of the mentality of a complete cross-section of the population. The biometrical ideal, a random sample, is very difficult to attain. A more practical plan is to select a suitable area and to investigate, as far as possible, all the children of certain ages living within it at a given date. It is to this aspect of the problem that the main activities of the Burden Mental Research Trust are now being directed.

Whilst this paper has been chiefly concerned with the limitations of pedigree collection, the constructive side of the problem has not been forgotten, and it is hoped to discuss this more fully on a future occasion.

Summary

It is sometimes asked why it is not sufficient to collect a number of pedigrees of mental defectives, and, having analysed them, settle the problem of heredity and mental deficiency once and for all. Both from the clinical and from the biological point of view the problem is a complex one, and a number of considerations are discussed that make it necessary to adopt more complicated lines of approach.

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REPAIR OF PERINEAL TEARS

A SIMPLE TECHNIQUE

BY

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Happily, extensive tears of the perineum are seen very infrequently nowadays. Tears involving the vaginal wall are still found in such cases as a primipara with a short quick labour, and in a multipara with much scar tissue, the result of a former tear, at least as often as in cases where forceps have been applied. The rates of maternal mortality are directly influenced by imperfectly repaired tears of the perineum. Sepsis is likely to develop when a tear is stitched in such a manner as to leave pockets and tags, or when a high vaginal or cervical tear is overlooked altogether. The general practitioner need never hesitate to investigate thoroughly, and feel satisfied that he has performed an efficient repair of any tear found if the following simple technique is carried out in all cases.

The Method in Detail

When sterilizing the forceps (whether to be used subsequently or not) there should be included in the sterilizer three rubber gloves, two artery forceps or needle-holders, two large half-curved needles, two small half-curved needles, a few strands of silkworm suture, scissors, a double speculum, and a flat-bladed tongue forceps or a vulsellum. Tubes of sterilized catgut should also be available.

Immediately after the birth and separation of the child (and while the mother is still presumably under anaesthesia) the patient is placed on the left side, with the buttocks over the raised edge of the bed or over a small pillow placed under the accouchement sheet, so that the drawn-up knees are on a lower plane than the buttocks. This position will permit the uterine discharges to flow forwards, downwards, and away from the area to be dealt with. A good light is essential.

The third rubber glove is pulled over the already gloved left hand. The left index finger is gently inserted to its full extent into the rectum. This finger is then swept forwards and downwards through an arc of 90 degrees, bringing practically the whole length of the posterior vaginal wall into the vaginal orifice, and so into full view.

If a tear in the vaginal wall be discovered, this is dealt with by a small needle and a continuous catgut suture, beginning at the uppermost limit of the tear. The edges should be carefully approximated by stitches no more than 1/4 in. apart. The second finger and thumb of the left hand can be utilized to help to tie knots and to retain the strand of catgut while the stitches are applied by the right hand. This suture is tied off on reaching the lower limit of the tear or on reaching the perineum if the tear extends into that part.

Should the tear be a very deep one, involving the sphincter and part of the rectum, the rectal tear is first repaired by interrupted catgut sutures from above downwards, with the knots tied off in the rectal cavity. The finger is then inserted in the rectum, as described, and a few interrupted catgut sutures applied from above downwards to bring the deeper tissues together. The sphincter is dealt with by applying a catgut suture deeply from one side to the other, taking in the anterior third of the circumference of the anal orifice. The vaginal aspect of the tear is now attended to, as previously described. Elongated tags, such as those caused by bifurcations of the tear, should be snipped off rather than run the risk of a slough later on.

When the perineum remains to be dealt with, or when only the perineum is involved in the tear, the two distal phalanges of the left index finger in the rectum will be found sufficient to make the perineal wound bulge downwards, exposing it in its full extent. A large needle, with silkworm suture, is applied in a deep stitch, taking in the perineal body. The finger in the rectum permits the needle to make a deep and sweeping course from one side to the other without fear of penetrating vagina or rectum. Two such sutures are usually sufficient in tears of the complete perineum. Before tying these sutures the finger is removed from the rectum, the outer glove stripped off the left hand, and the gloved hands swilled in antiseptic solution. The perineal sutures should not be tied tightly. One or two additional interrupted shallow or skin sutures may then be put in to exactly approximate any gaping skin edges of the perineal tear. A loose strip or tag should be snipped off.

After the placenta is expelled (I have never seen a placenta, in its passage down the vagina, break down a repaired tear of vagina or perineum) and the uterus is firmly contracted, the cervix should be examined. With the patient in the same position a speculum is gently inserted along the (repaired or intact) posterior vaginal wall and the cervix viewed by the light of a torch held by the nurse. If a cervical tear be discovered the nurse is asked to kneel on the bed behind the patient's back, and, only if it be well contracted, to press the fundus of the uterus gently down into the pelvis. With this manœuvre it is surprising how near the vaginal orifice the cervix will present itself. A flat-bladed tongue forceps, in preference to a vulsellum, is made to take a light grip of the cervix, and may be safely handed to the nurse, to be held to one side. The cervical tear is repaired, with a small needle in holder, by catgut suture, beginning distally to the cervical opening.

It is important after this operation to see that the uterus returns to its normal position. This should, owing to the possibility of a retroversion, be confirmed in all confinements by pressing the edge of the right hand deep into the abdominal wall, between the pubes and the body of the uterus, sweeping the latter upwards if necessary.

Anaesthesia is obtained by chloroform in a Junker's outfit, which is tied to the head of the bed or otherwise suspended in full view of the operator and beyond the patient's reach. The mask and bellows are manipulated by the patient, with help from the nurse, under the operator's instructions. The nurse should wear rubber gloves for ease in cleansing, and face masks are worn.

Advantages of the Method

The advantages of applying this technique in all cases are as follows. (1) Its simplicity and possibility of being carried out without assistance other than that of a nurse. (2) No tears are ever missed. (3) Hidden areas are easily

brought into full view and accessibility for efficient treatment. (4) The area to be dealt with is actually within the control of both hands, and deep sutures may be safely and fearlessly applied where required. (5) The choice of time permits the usual hiatus between birth of child and birth of placenta to be usefully filled in. (6) Shorter anaesthesia. (7) Double-gloved left hand obviates fear of contamination from rectum.

This method of dealing with perineal tears may be as old as the hills, but neither in hospital nor in general practice have I seen it in use. Over a period of approximately seven years I have found it not only useful under the peculiar difficulties of labour conduction in general practice, but easy of application and attended by good results.

Clinical Memoranda

Ocular Torticollis or Squint

In an article published in this *Journal* on March 3rd, 1934, I suggested that when the syndrome described by Duane in 1916 arose, of weakness of a superior rectus followed by and associated with hypertrophy and overaction of the complementary inferior rectus in the other eye, the patient was confronted with two alternatives. If the refraction was normal he would probably tilt the head to avoid diplopia: whereas, if the refraction favoured it, he would squint and suppress the offending image.

Many of my colleagues, as well as myself, since our attention has been directed to it, find quite an appreciable number of convergent squints in which, when looked for, overaction of the inferior oblique is a conspicuous feature. I said in my paper that when I should meet with a recently acquired convergent squint with this additional symptom I intended to divide the oblique first, to see if the convergence, which I surmised was merely a protective device, would disappear. I have now met a case which rather lends support to my hypothesis.

A boy, aged 23 months, was brought to my out-patients a few months ago with a left convergent squint of about 40 degrees. This had been noticed for three months, since an attack of pertussis. I sent him for refractive examination. It was found that there were in the right eye two and a half dioptres, and in the left five dioptres, of hypermetropia. Glasses were prescribed, but when he saw me a fortnight later there was no diminution of the squint. On a more careful examination I found great overaction of the left inferior oblique. The left eye "cocked up" strongly on looking up and to the right.

Here was a squint of only three months' duration, with hardly time for amblyopia to have set in, and just the refractive condition which I had postulated for a hypertrophied inferior oblique to produce squint instead of head-tilting. A week later I did a myotomy of the left oblique. I removed a quarter of an inch, and sent him home on the third day. Seen a week after the operation, the convergence had completely disappeared, with or without glasses. Two months later the condition was the same.

It must be emphasized that this squint had only been developed three months, and that, since he had both hypermetropia and anisometropia, to fall into a squint with suppression was the path, for him, of least resistance: a facile Avernine path indeed. Had he had normal and equal refraction he would probably have become a head-tilter.

I am reporting this case not only because it supports the theory that I have sponsored, but because it suggests a new line of thought as regards both aetiology and treatment in a small proportion of convergent squints. Overaction of the inferior oblique should be looked for and identified or ruled out in all cases of early strabismus. How easy it is to miss may be seen in this case, where both myself and my junior, though each on the look out for such cases, did not discover it on the first examination. This, however, was merely for want of looking.

I need hardly say that if the squint has existed so long that amblyopia is present, such a procedure as myotomy of an inferior oblique, though possibly desirable on other grounds, will not, and could not, be expected to cure the squint. And equally clearly, in such a case as I have outlined above, to attempt to cure the squint by any other operative procedure would be incorrect practice based on a wrong conception of its pathology.

E. TEMPLE SMITH, F.R.C.S.Ed.,
Sydney, N.S.W. D.O.Oxon.

Delayed Haemorrhage from Ruptured Spleen

The case reported below was seen a few days after Mr. Harold Dodd's article was published in the *British Medical Journal* of December 15th, 1934 (p. 1094). This, and the fact that fewer than fifty similar cases are to be found in the literature, has prompted me to add it to the collection. Incidentally Mr. Dodd's article was of great value as an aid to early diagnosis.

Case History

On December 10th, 1934, a young man, aged 19, was climbing over a fence and fell from it on to his left side, so that the left elbow was forced against the left lower ribs. The degree of violence was comparatively slight. He immediately experienced severe pain in the left side, but was able to cycle home, a distance of two miles. He went to bed, where he remained for six days. The pain in the left side persisted. There was no vomiting, but there were attacks of faintness and cold sweats. During the course of the illness the bowels were opened only once; this was on the fourth day after the accident.

On December 17th, a week after the fall, the patient got up, although he felt no better. While he was sitting at the breakfast table he suddenly became very faint. The pain rapidly grew worse, and spread across the upper abdomen, round to the back, and up to both shoulders, particularly the right. There was some shortness of breath, and the pain was increased by coughing or by taking a deep breath.

Two hours later the patient was admitted to hospital. The temperature was then 97°, pulse rate 92, and respirations 20. He looked pale and sallow. The skin was cold and moist, and the tongue was furred. Examination of the abdomen revealed generalized muscular rigidity and a marked diminution of abdominal respiratory movements. There was also generalized tenderness, most marked (1) in left hypochondrium, (2) in right hypochondrium, (3) in right iliac fossa. There was no distension. There was some dullness in the flanks, but particularly on the left side. Liver dullness was normal, but splenic dullness was diffusely increased.

The patient was kept under observation for a few hours, during which the temperature gradually rose to 100.6°, the pulse rate to 120, and the respirations to 28. The pain was constant. The abdomen was then opened through a left paramedian incision, and found to contain a considerable quantity of blood. There were masses of blood clot in the neighbourhood of the spleen. The organ showed a long laceration in the long axis of its lateral surface, and was removed. A blood transfusion was given immediately, and repeated the next day. The patient made a good recovery.

This case illustrates well some of the points quoted in Mr. Dodd's article, but pain was more marked in the right shoulder than in the left. There was no diarrhoea, and the caecal distension was absent.

I am indebted to Dr. J. F. Hackwood, Medical Superintendent of Farnborough Hospital, where the case occurred, for permission to publish it.

Hendon. ROBERT GARDINER, M.B., F.R.C.S.Ed.

Reviews

DISEASES OF THE HEART

The third edition of the excellent textbook on *Diseases of the Heart*, from the Glasgow and Edinburgh schools, by Dr. JOHN COWAN and Professor RITCHIE,[1] makes interesting reading, and bears the stamp of the long clinical experience of the authors. To begin with, there are two chapters devoted to anatomy and physiology. Here we find the new information about the blood supply of the heart; the nervous control of the heart and coronary circulation are discussed, with the work of the heart. For the student this serves to link up his preliminary studies with his clinical work. The chapter on circulatory failure, which contains interesting matter concerning the causation of oedema, seems rather short, in view of the great importance of the subject—only fifteen pages in nearly six hundred. Then follows a chapter on myocardial pathology, in which, perhaps, the student might find some illustrations lacking in clearness. The chapter on the examination of the heart by the electrocardiograph is very compact but clear. Here, as throughout the book, the electrocardiograms are excellent. The brevity of the treatment of this subject is compensated for by reference throughout to electrocardiograms where they form an important part of the clinical picture, which is as it should be. The arrhythmias, with flutter and fibrillation, are well dealt with, and there are a few pages on ventricular fibrillation.

The use of quinidine is discussed in a sound and clear manner. With heart-block, bundle-branch block is considered. The authors do not accept the views recently put forward that what was formerly thought to be right bundle-branch block is really left, and vice versa. After alternation comes a chapter on tonicity. It is unusual to isolate this defect and make it the object of special diagnosis, and many will doubt whether it is helpful, or whether it can be done. Rheumatic disease of the heart is dealt with in a clear survey. Some might find it confusing that much belonging to this topic comes under acute endocarditis—along with the streptococcal infections (subacute infective or bacterial type). In the chapter on syphilis Fig. 172 hardly conveys all that it might. Aneurysm of the aorta stands alone at the end. Chapters on chronic valvular disease and the symptoms thereof follow. Perhaps greater clearness might have been attained if some of these latter had come under heart failure. There is a good chapter on the significance of physical signs, and the prognosis of chronic valvular disease is well discussed. A wide view is taken: the only basis of sound foresight. The treatment of cardiac failure occupies fourteen pages, and here again the reader may, like Oliver Twist, "ask for more." Diseases of the myocardium, from the clinical point of view, come next; rather far from the chapter on their pathology. The diagnosis of myocardial weakness is well done. Angina pectoris and infarct of the heart come together, while diseases of the arteries include high blood pressure. Perhaps essential hypertension would be better understood if kept as an entity. Here thrombo-angiitis obliterans, atheroma, and so forth, all come together. The ocular manifestations of arterial disease have a useful short chapter by an ophthalmic expert.

There are many references throughout the text, collected together at the end, 646 in all. These are up to date and extensive. The subject-matter is illustrated in an interesting way by cases seen by the authors, who draw largely on their experience and quote their own series. Several chapters are pleasantly set off by apt quotations, which make their bow in medical literature for the first time and serve well to "point a moral or adorn a tale."

[1] *Diseases of the Heart.* By John Cowan, B.A., M.D., D.Sc., F.R.F.P.S., and W. T. Ritchie, O.B.E., M.D., F.R.C.P.Ed. With a chapter on "The Ocular Manifestations of Arterial Disease" by Arthur J. Ballantyne, M.D., F.R.F.P.S. Third edition. London: E. Arnold and Co. 1934. (Pp. 631; 335 figures. 30s. net.)

TROPICAL MEDICINE

The call for a second edition of *Tropical Medicine*,[2] by Sir LEONARD ROGERS and Sir JOHN MEGAW, within five years of the publication of the first edition, which was reviewed in our issue of September 30th, 1930, is a sufficient indication that a small inexpensive volume written for general practitioners rather than for specialists was needed. The new edition retains all the characters of the first edition, and, in spite of the insertion of fresh matter representing recent contributions to knowledge under the headings of malaria, leprosy, yellow fever, nutritional diseases, typhus fevers, and other subjects, the size of the book has not been increased.

As in the first edition, the reader will find here a lucid general account of present-day knowledge of tropical medicine in all its branches. With this book in his hand he will have a clear picture of each disease unencumbered by details which might be unnecessary for his purpose, he will be able to handle practically all the problems which are likely to confront him in his daily work, and will find himself in a position to give advice in all essential matters. The great point about the book is that it gives within a reasonable compass an accurate and adequate picture of tropical medical practice. Mistakes are practically non-existent, and though it might seem that certain facts such as those relating to *Plasmodium ovale* have been omitted, it has to be conceded on reflection that these are not actually necessary for the diagnosis and treatment of disease. There is no doubt that the student and practitioner cannot do better than study this book carefully if they are desirous of placing their knowledge of tropical medicine on a good foundation.

CLINICAL SYPHILOLOGY

Modern Clinical Syphilology,[3] by Professor JOHN H. STOKES, is surely the most complete and up-to-date work on the subject. The author and his collaborators have spared no pains to make the volume all-embracing and to omit no detail: the work bears the stamp of experience, industry, and effort. Few could have carried through so successfully such a Herculean task, and the author is to be congratulated on the result.

The book falls naturally into several sections: (1) general pathology (which is condensed into some forty pages); (2) pathological diagnosis, including identification of the causal organism and the various serum and spinal fluid tests; (3) treatment, with its indications, contra-indications, and reactions; (4) clinical diagnosis of the various stages of the disease, and a description of its effects on the various organs of the patient; (5) congenital syphilis; and (6) various cognate matters. No fewer than 973 figures are included—many of them beautifully produced pictures of syphilitic lesions or lesions simulating syphilis, and illustrations of technique; others include summaries calculated to help in differential diagnosis or to catch the reader's eye and drive home some

[2] *Tropical Medicine.* By Sir Leonard Rogers, K.C.S.I., C.I.E., M.D., F.R.C.P., F.R.C.S., F.R.S., Major-General I.M.S. (ret.), and Sir John W. D. Megaw, K.C.I.E., M.B., Hon. D.Sc. Second edition. London: J. and A. Churchill Ltd. 1935. (Pp. 547; 82 figures, 2 coloured plates. 15s.)

[3] *Modern Clinical Syphilology. Diagnosis, Treatment, Case Studies.* By John H. Stokes, M.D. Second edition. Philadelphia and London: W. B. Saunders Company. 1934. (Pp. 1,400; 973 figures. 50s. net.)

important points, while others are statistical. A considerable portion of the text is printed in small type with the object of keeping the volume within bounds.

Criticism of such a monumental and altogether admirable work would seem almost churlish—but it may be permitted if the intention is to be constructive. The author shows a tendency to prolixity and diffuseness, so that at times it is a little difficult to "see the wood for the trees"; some condensation, together with clearer grouping of subjects and less tendency to overlap, would lessen the size of the book (which runs to 1,400 pages and weighs 7 lb.) and make it easier to read. The subject is such a vast one and the amount of clinical material around which it is written is so large that we doubt whether, in any future edition, the author will be able to limit himself to a single volume. Some space could be saved by cutting down the number and size of the figures illustrating technique, such as venesection, lumbar puncture, and the giving of injections, which the author has made into what might almost be described as a ritual. If the author's advice is often a "counsel of perfection" it must be admitted that it is invariably sound, and founded on an incomparable experience.

Perhaps this imposing tome will appeal more to the specialist than to the student or general practitioner, but everyone who has to deal with syphilis in its many and varied forms will benefit by a very careful perusal of its pages, and Professor Stokes has earned the gratitude of all English-speaking medical men for his masterly handling of a most onerous and difficult theme.

ANNALS OF MEDICAL HISTORY

The eight articles in the last instalment of the *Annals of Medical History*[4] fall into two groups: those of personal interest, which, as it happens, are of comparatively recent date, and those dealing with more general topics and ideas, several of which treat of ancient history. The opening article by Miss Estelle C. Bick sketches the life of Sir Francis Seymour Haden, whose portrait appears as the frontispiece. Though primarily a surgeon, his artistic inclinations were probably fostered by his parents' musical interests, but he was much influenced by his friend Whistler, and was responsible for the renaissance of painter etching, which must not be confused with line engraving. In contrast to another artistic surgeon, Sir Henry Thompson, Haden vigorously opposed cremation, on the ground that it would be an incentive to crime, and invented a *papier mâché* coffin as favourable to natural "earth to earth" burial. Dr. H. Fox of Philadelphia gives an account of the work in medicine and hygiene of Baron Kitasato, who from 1885 to 1892 carried out pioneer researches in Germany on tetanus and diphtheria. Writing on the evergreen subject of tuberculosis and genius, Dr. L. J. Moorman discusses the problems of Robert Louis Stevenson's life, which represents a peculiar blending of hereditary and environmental factors, constantly dominated by a virile genius. Among the other five articles that on "rejuvenations and satyricons of yesterday" by Dr. Pan. S. Codellas of San Francisco contains a very graphic account of Medea's treatment of Aeson, discusses the attitude of the ancient Greeks to old age, and the evolution of organotherapy. Dr. Casey Wood, during eight years spent in the Far East, has collected much interesting material, some of which is set out in his article on Sinhalese and South Indian ceremonials in the prevention and treatment of disease. Miss Minna Lewinson touches on the wits in the first quarter of the eighteenth century in a short essay entitled "Aesculapius among the Augustans." The history of the stomach tube is admirably elucidated by Professor Ralph Major of Kansas City, who traces the first instrument of this kind back to the fourth century of this era. Dr. Eric Stone contributes a well-illustrated account of medicine among the Iroquois.

[4] *Annals of Medical History*. New Series, vol. vi, No. 6, November, 1934. Edited by Francis R. Packard, M.D. New York: Paul B. Hoeber, Inc.; London: Baillière, Tindall and Cox. (Pp. 475–568; illustrated. Volume of six numbers, £2 15s.; single number, 12s. 6d.)

THE ACTION OF DRUGS

Professor TIFFENEAU's textbook, *A Synopsis of Pharmacology*,[5] which has now reached its fourth edition, is of particular interest, because it differs markedly from most other French textbooks on this subject. The science of pharmacology was founded in German universities, in particular in Dorpat and Strasbourg, and the teachings of these schools influenced profoundly most of the schools of Europe and America. The French medical schools seem, however, to have been but little influenced by the developments that have occurred in pharmacology in other countries. This fact is indicated by even the general arrangement of most of the French textbooks, since in these the drugs are classified simply as animal, mineral, and vegetable, and the vegetable drugs are arranged according to the natural orders from which they are derived. Professor Tiffeneau has, however, broken away from this unfortunate tradition, and in his short textbook gives a clear account of modern knowledge regarding the mode of action of drugs. The subject is arranged in a rational manner according to the nature of the actions. The treatment is concise but clear, and the author has selected for mention only those drugs which are of real importance.

A special feature of this textbook is the large proportion of space devoted to organic chemistry. A fairly liberal use is made of structural formulae, and by this means the chemical nature of both natural and synthetic compounds is demonstrated clearly. The volume has evidently been revised very carefully, and a clear account is given of such recent discoveries as atebrin, ascorbic acid, etc. Tiffeneau's textbook was first published in 1926, and it well deserves the popularity which has led to the appearance of a fourth edition.

[5] *Abrégé de Pharmacologie*. By Professor M. Tiffeneau. Fourth edition. Paris: Vigot Frères. (Pp. 242.)

THE YOUNG FOLK AT HOME

The Adolescent in the Family[6] contains the report of the subcommittee of the White House Conference on Child Health and Protection. Two main conclusions emerge from this study: (1) That the externals of home life, like its economic status or its housing arrangements, while important, are not nearly so significant for the development of the child's personality as are the subtler and more intangible aspects of family life, such as affectionate behaviour, relations of confidence, inculcation of regularity in health habits, and reactions to the illness or nervousness of the parents. (2) That the average level of family relations and of personality adjustments of the children is somewhat higher for urban than for rural children. This may show the result of the greater effect of child study and child care movements in the city than in the country. In addition, the importance of a united family is stressed, especially from the psychological standpoint, and the necessity for the child to live his own life and not to become the mere drudge who shall carry out duties imposed upon him by elders. A large number of children are found to be faulty in their psychological

[6] *The Adolescent in the Family. A Study of Personality Development in the Home Environment*. White House Conference on Child Health and Protection. New York and London: D. Appleton-Century Company. 1934. (Pp. 473. 12s. 6d. net.)

development, and this seems to be due to lack of competent and understanding adult friendship. An example of lack of understanding is found in the attempt to teach sex facts to children by means of parables which seem "beautiful" to the adult, but which the children do not understand.

So far so good, although these conclusions are not very new. Nevertheless, if this were a confirmation of preconceptions by really satisfactory investigation and statistical methods it would be extremely valuable. Unfortunately, however, a further examination of the book does not make for confidence on this point. The inquiry is by means of a questionary to teachers and children, but it does not seem likely that the answers from the latter can be very reliable. Psychotherapists have demonstrated that reliable information is not to be gained by blunt catechism, and that autobiographies are not to be taken at their face value nor yet interpreted by code. The committee, however, assumed that it could draw valid conclusions as to health and happiness without either seeing or talking to the children or their parents; and that facts such as that a young adolescent rarely kisses his parents, or that he tells them "almost everything," have a constant significance. Temperamental differences are consistently disregarded; radicalism is always a sign of maladjustment. The committee even presents a final list of questions to be used in order to calculate successful adjustment, but, as this scale is based on statistics which show that between estimated emotional stability and good personality development there is only a low degree of correlation (though the terms are practically synonymous), its value is small, while it might prove dangerous in the hands of the inexperienced. The teachers' reports in no way compensate for the lack of trained personal investigation; and why should discrepancies between the teacher's report and an independently estimated intelligence quotient prove the reliability of the teacher?

As a whole, therefore, this work, while interesting, cannot claim to establish its conclusions on a sound scientific or statistical basis.

Notes on Books

In *The Philosophy of a Biologist*[7] Professor J. S. HALDANE sets out the mature meditations of a most eminent physiologist who, for fifty years, has been busy in the home of the philosophy of T. H. Green and F. H. Bradley of Balliol College, Oxford. Of the claims of vitalism against the mechanistic theory of which Descartes in the middle of the seventeenth century is generally regarded as the protagonist, the author has previously been an eloquent advocate. In successive chapters on philosophy and physical science, philosophy and biology, philosophy and psychology, and philosophy and religion, this difficult problem is clearly and critically considered. In the second half of the last century vitalism was generally abandoned, but the characteristic features of life were thus left entirely obscure; sciences, the author insists, only partially represent reality.

In his pamphlet on "The Thyroid Origin of Pains and Their Treatment"[8] Dr. ZÉNOPE BEUREKDJIAN of Paris, who has treated more than 500 patients by irradiation of the thyroid, makes a rather surprising claim for the benefit conferred by this form of treatment in the pains associated with headache, migraine, glaucoma, angina pectoris, hepatic and renal colic, lumbago, sciatica, chronic rheumatism, and other ills that flesh may suffer from. The underlying condition is regarded as hyperthyroidism. Though a number of cases are quoted, the claim is so considerable that many more are necessary to carry conviction. In the last chapter it is stated that the diathetic diseases—arthritic, lymphatic, nervous, neuro-arthritic, and anaphylactic—have a common origin, in the thyroid, and are curable by irradiation of the thyroid.

GUSTAV SINGER'S book, advocating the treatment of diabetes by protein injections,[9] presents ideas quite unfamiliar to most English readers. And, although the author has now practised it for ten years, it has aroused little enthusiasm even in his own country, and been condemned as useless by authorities in Vienna, such as Falta and von Noorden. Dr. Singer treats diabetes by courses of protein injections. At first he used casein compounds, but now mostly favours vegetable proteins, "phytoprotin" and "aktoprotin," whose composition is not stated in the book, nor known in this country. The reason for his happy results will be obvious to anyone familiar with diabetic therapy and the trial of new remedies. His statistics show that he has had the good fortune to treat mostly mild, elderly patients, who are easily controlled by diet restriction alone. And his diets are so low in carbohydrate and in total calories that no further treatment should be necessary for any elderly diabetic. If applied to the younger generation, we trust they would cause yet another revolution in Vienna; they certainly would in the well-fed young diabetics in this country. But then Dr. Singer does not quote a single young case he has treated. Most doctors who have used insulin successfully will take exception to his bitter attack on insulin in the first chapter, in which he exaggerates the difficulties of using it and minimizes the benefits. The book is unbelievable, but so are the arguments!

In *The Technique of the Golf Swing*[10] Dr. PETER FOWLIE sets out to explain, in simple language, the meaning of the golf swing and the correct method of its production. In terms which will be readily understood by all, but most easily by those who possess anatomical knowledge, the function of the different parts of the body in producing the correct swing are described and elaborated. At the outset emphasis is laid on the action of swinging as opposed to hitting. The arms are to supply no power to the stroke, but to confine their function to aim and control. Power is to be derived from the legs and hips, especially by the correct tilting of the latter. Scant reverence is paid to many familiar terms of advice—such as, warn the player not to sway his body or rise on his toes, and encourage him to hit up against a stiff left side. An interesting little book, well worth the attention of the golfer, who so often asks the question of his caddie, "What am I doing?" There remains, however, to many of us hardened sinners the biggest question of all yet to be answered—namely, "How can I make my body do what I want it to do?" The biggest problem in the game of golf seems, after all, but a reflection of the biggest problem in the game of life, and as difficult of solution.

Among the year-books we have received is the fifty-first annual issue of the *Official Year-Book of the Scientific and Learned Societies*.[11] This latest edition retains the general arrangement of contents which was first adopted three years ago, and which has been found so universally popular. The size also remains about the same.

The Pharmacological Action of the Harrogate Drinking Waters,[12] by Dr. WILLIAM BAIN, gives an account of the effects of these waters on bile secretion in man and the dog, and also describes their action on the isolated gut of the rabbit, the isolated mammalian heart, and the intestinal movements and cardiac action of anaesthetized mammals.

[7] *The Philosophy of a Biologist*. By J. S. Haldane, C.H., M.D., F.R.S. London: H. Milford, Oxford University Press. 1935. (Pp. xii + 155. 6s. net.)

[8] *Origine Thyroïdienne des Algies et leur Traitement Radical*. By Dr. Zénope Beurekdjian. Paris: Libraire le François. 1935. (Pp. 157. 30 fr.)

[9] *Praxis der Unspezifischen Diabetesbehandlung*. By Professor Dr. Gustav Singer. Wien: W. Maudrich. 1934. (Pp. 117; 19 figures, 24 tables, 7 curves. M. 8.)

[10] *The Technique of the Golf Swing*. By Peter Fowlie, M.B. London: Methuen and Co. Ltd. 1934. (Pp. 117; 21 figures. (5s. net.)

[11] London: C. Griffin and Co., Ltd. 1934. (Pp. 164. 10s. net.)

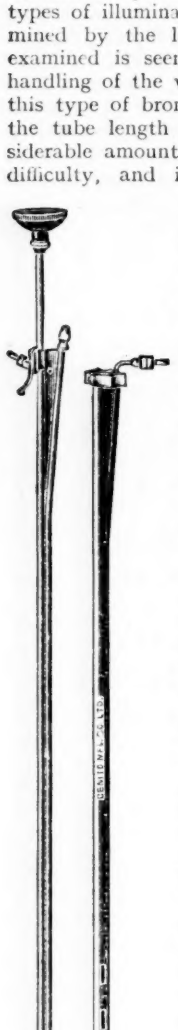
[12] *The Pharmacological Action of the Harrogate Drinking Waters*. By William Bain, M.D., F.R.C.P., F.R.C.S.Ed. London: J. and A. Churchill, Ltd. 1935. (Pp. 53; 26 figures. 5s.)

Preparations and Appliances

A NEW BRONCHOSCOPE AND BRONCHOSCOPIC TECHNIQUE

Drs. A. J. SCOTT PINCHIN and H. V. MORLOCK (London, W.1) write:

Ever since its inception, bronchoscopy has been done with the naked eye through tubes of varying lengths, sizes, and types of illumination. The visual field in this case is determined by the lumen of the tube, and the object to be examined is seen under a very small angle. The accurate handling of the various instruments used in conjunction with this type of bronchoscope—as they must of necessity exceed the tube length by two to four inches and occlude a considerable amount of the lumen—is a procedure fraught with difficulty, and it requires great skill. Moreover, spatial orientation is impossible, and the treatment of growths by means of the coagulating electrode is dangerous, as the lack of accurate apposition causes damage to the wall of the bronchus, which may lead to stenosis.



The technique we have evolved with our telescopic instruments has been approved by many laryngologists—at home and abroad—who have visited our clinic. In America it is apparently still unrecognized, for in a recent paper by Eloesser[1] the statement is made: "It is unfortunate we have no means to see up the upper lobe bronchus." Those familiar with our instruments will know that with the retrograde telescope a clear view of the branches of the upper lobe bronchus can be obtained. We have used these instruments now for over 2,000 bronchoscopies, and we are convinced that for cleanliness of approach, wide field of vision, and a true colour picture they are essential. It appears to us probable that in a few years optical instruments of this type will as surely displace the old-fashioned bronchoscope as the direct vision cystoscope has been superseded by those with optical systems. From the diagnostic point of view the modified Chevalier Jackson bronchoscope, with a lens-fronted lamp projecting a beam of light forward with direct vision and retrograde telescopes designed for us and described three years ago,[2] has proved so satisfactory that no modification has been necessary. The operating telescope we had in use at that time has not been successful, and has been discarded.

THE INSTRUMENT

During the past two years we have been trying to evolve an instrument by which operations down the bronchus could be done under direct vision and with absolute accuracy. The present instrument has been constructed with the invaluable assistance of Mr. Schranz of the Genito-Urinary Manufacturing Co., who are the makers. An experimental model has been in constant use during the past year, and we are convinced that it permits of a degree of accuracy unobtainable with older instruments. Moreover, it may be used both for diagnosis and for treatment.

The design is completely different from that of any existing bronchoscope. The bronchoscopic tube is 41½ cm. long by 9 mm. external diameter. It practically corresponds with the old 7 mm. tube, and can be entered as far. The distal end is bevelled and the proximal end expanded into a funnel. The tube is introduced with a laryngoscope in the ordinary way, and for that purpose it is fitted with a simple lamp-carrier which may be removed when the trachea is entered. The operating attachment is then passed down and clipped in position. This attachment consists of two parallel tubes, one for holding the telescope and the other the various instruments. The instrument tube is bevelled at the distal end, and the edge slightly reinforced. At the proximal end this instrument tube is bent away from the telescope in a very gentle curve, and is provided with a fitting to which the suction tube can be attached. The curve is so gradual that the delicate Chevalier Jackson bronchoscopic forceps can easily pass.

The lamp is fixed at the distal end between the two tubes and slightly to one side. The electric wire runs in a fine tube along the groove formed by the main tubes, and terminates in a post to which the battery cable is attached. A second attachment, similar to the one described, is provided, with the distal end of the instrument tube bent slightly towards the telescope, so that the flexible instruments, gum-elastic suction catheters, and diathermy electrodes can be brought right across the field of vision. It will be noted that the instrument channel can be used for evacuating pus or blood from the main bronchi, by attaching the suction tube to the olive at the distal end.

In actual practice these attachments, comprising telescope and lamp, can be treated as part of the instrument one uses rather than part of the bronchoscope. If, for instance, a foreign body is grasped in the jaws of the forceps it is merely a matter of releasing a spring clip and withdrawing the forceps with the attachment. For aspirating pus from the lateral bronchi or abscess cavities we use long, flexible gum-elastic catheters, which can be passed under vision five or six inches up the branch bronchi to the periphery of the lung with the greatest of ease, and, if armed with a spring stylet, can be readily introduced into the upper lobe bronchus, and even, with practice, into its branches.

The adult model comprises the following instruments: bronchoscopic tube and lamp-carrier, telescope, operating attachment with straight end, operating attachment with curved end, forward- and side-grasping forceps, biopsy forceps, diathermy electrode with adjustable tip, diathermy electrode with ball-shaped tip, hypodermic needle for injections, and four flexible suction catheters of assorted sizes and with coil spring stylets.

[1] *Amer. Rev. of Tuberculosis*, 1934, ii, 123.
[2] *Lancet*, 1932, i, 671.

DIPHTHERIA PROPHYLACTIC A.P.T.

Alum-precipitated toxoid (A.P.T.) of high immunizing efficiency, made at the Wellcome Physiological Research Laboratories, is now available commercially, and is issued by Burroughs Wellcome and Co. (Snow Hill, E.C.1) in germ-proof containers of 1 c.cm. and 5 c.cm.

The discovery that alum-precipitated toxoid (A.P.T.), even in one dose, was a prophylactic of extraordinarily high immunizing power in animals, was made in the Wellcome Physiological Research Laboratories in 1926; its use in human preventive medicine was referred to in 1931. Since that date the high immunizing efficiency in human beings has been established, but progress has been cautiously slow because of the risk of causing tissue response at the site of injection; this, though medically trivial, may disturb parents. The efficiency of A.P.T. is thought to depend on the deposition of the relatively insoluble aluminium-toxoid body at the site of injection; from this the immunizing toxoid is gradually liberated. The complex toxoid body, however, excites a tissue response, causing a small, painless nodule. This tissue response is probably an essential factor in the excellent immunization which occurs.

Experiments as yet unpublished, made in the Wellcome Physiological Research Laboratories, have shown that in animals two spaced injections of one-tenth, or less, of the ordinary human dose will give more rapid or higher immunity than one single dose. It is possible that a similar method may prove useful in human immunization, the chance of troublesome local tissue response being much less by this method.

A CALCIUM-VITAMIN PREPARATION

Calsimil (British Drug Houses Ltd.) is a preparation in the form of a 10-grain tablet containing 5 grains of calcium sodium lactate and 500 international units of pure crystalline vitamin D. The rationale of the preparation is to provide a readily assimilable calcium salt, together with a supply of vitamin D to promote absorption. The actual calcium requirement of a growing child is about 1 gram daily, and an adult needs about two-thirds of this amount, whilst during pregnancy the daily requirement of calcium is more than 1 gram. Milk is the chief source of calcium in the diet, and a milk-poor diet does not contain more than the minimum calcium requirement. Calsimil is recommended for administration during periods of high calcium need—namely, periods of rapid growth and pregnancy. It is also suggested for treatment of a variety of minor disorders, such as chilblains and urticaria.

WORK OF THE HOSPITAL ALMONER

The annual meeting of the Institute of Hospital Almoners on February 21st was addressed by Sir Walter Langdon Brown, Regius Professor of Physic in the University of Cambridge.

He began by referring to the early history of the almoner at his own hospital, St. Bartholomew's, whose records showed that there were formerly almoners charged with the duty of examining all persons brought to the hospital and admitting them at discretion. In course of time those officials became the house committee, but the administrators of the hospital were still known collectively as "the treasurer and almoners." As the nineteenth century went on, the machinery for dealing with patients attending the large hospitals was seen to be entirely inadequate, especially on the medical side. He had talked with those who remembered that in their own hospital days there was a functionary known as the apothecary, who sorted out the patients in the casualty department by asking all those afflicted with whatever the prevailing symptom might be to hold up their hands, and thus the patients were divided into groups, and many of them received symptomatic treatment without further inquiry. St. Bartholomew's replaced the "apothecary" by casualty physicians and surgeons, who had been through house appointments and were either waiting for staff vacancies or were already junior members of the staff. That was a great advance, but how speedily it proved inadequate could be gathered from the *Account of the Casualty Department*, written by Robert Bridges, afterwards Poet Laureate, who, as a practising doctor, was the first to make a real protest against the inadequacy of hospital methods in this respect. The speaker said that when he himself entered Bart's, seven years after Bridges had written, he was, even as a novice, appalled at the magnitude of the task and the difficulties to be overcome. Owing to the efforts of Sir Charles Loch, the first lady almoner, Miss May Stewart, was appointed in 1895; she worked at the Royal Free Hospital, and he fancied there was an inquiry officer at St. Bartholomew's when he joined the staff in 1894; at any rate, there was such an officer shortly afterwards, but all he had to do was to try to prevent hospital abuse. At that time, although the staff realized that their efforts were often rendered nugatory by the absence of help on the social side, there was no constructive policy. The idea of a new type of almoner, trained in methods of sympathetic investigation and scientific relief, had scarcely arisen. When he joined the Metropolitan Hospital in 1900 the senior physician was Dr. Alexander Haig, who pressed strongly for the service of a trained worker to follow up patients from hospital wards into their own homes.

To-day follow-up machinery of some sort was a recognized part of the system in every well-equipped hospital, but it was clear that any follow-up scheme must be at least as largely social as medical in its activities. He had repeatedly said that quite as many people were ill because they were unhappy as were unhappy because they were ill, and the cause of the trouble could, in a very large proportion of cases, be traced to home conditions. Unless such home conditions were known and taken into account through a system of trained almoners—necessitating, indeed, a considerable expansion of the present system—he did not see how adequate, intelligent, and successful medical treatment was possible. Sir Walter Langdon Brown added that he was glad to learn from the annual report of the Institute that there was a rapidly increasing demand for certificated almoners. The almoner was called for in municipal no less than in voluntary hospitals, and in the general hospitals of the London County Council a scheme which included the appointment of almoners in all of them had been adopted. It was interesting to note the increased demand for social workers in hospitals and clinics devoted to the treatment of mental illness. All social work in mental hospitals ought to be based on experience of such work in general hospitals. In anticipation of his address he had received some criticisms of the almoner system. One difficulty concerned the amount of circumlocution often entailed by correspondence which had to go the round of the doctor, the almoner, some outside organization, and the hospital secretariat. Another correspondent criticized the almoner's too stereotyped approach, and suggested that it was not her duty to grind sixpences and shillings out of working-class patients without ascertaining the details of the family budget, even though the patient might himself be earning well. It had also been asked whether the almoner could do anything to remedy the long waiting in the out-patient department—an old and most intractable problem. But it was encouraging to realize that although the modern type of almoner originated only forty years ago, what had been done in that time had enormously helped to alleviate the suffering of those who had to seek the services of a hospital, and had also worked out to the great advantage of their families.

Sir Walter Langdon Brown was thanked for his address on the motion of Dr. H. K. Goadby, seconded by the chairman of the meeting, Dr. A. B. Howitt, M.P. The report presented by the Institute included a list of just over 200 certificated almoners actually in posts. Several of these are in Australia, where the work of the Victorian Institute of Hospital Almoners is closely linked with the progress of almoners' work on this side of the world. Six new posts were reported in Melbourne during 1934. Until recently the head almoner at the Melbourne Hospital was responsible for the planning and arrangement of the whole of the almoner students' training, but now the Melbourne Board of Social Studies has appointed a directress of training for this purpose. A temporary exchange of almoners between Australia and this country has come into being, and, it is hoped, will be renewed.

Passing reference may be made here to the issue of a rewritten and enlarged edition of a little book, *The Hospital Almoner: A Brief Study of Hospital Social Service in Great Britain*,[1] prepared by a committee of the Hospital Almoners' Association. The first edition, privately printed some two years ago, was noticed in an annotation in these columns on November 19th, 1932.

PENSIONS MEDICAL SERVICE

CLINICAL REPORT

We have received a copy of the report of the Director-General of Medical Services, Dr. J. H. Hebb, to the Minister of Pensions, dated January, 1935. The report describes the work done by the Medical Services of the Ministry, and covers the twelve months ending March 31st, 1934. It is stated in the introduction that, as no connected record of the organization and work of the Medical Services Division has previously appeared, it has been felt desirable to incorporate into the picture of the year under review "a background of former events and developments." Extracts from the clinical annotations in Part III of the report, on certain subjects of general interest, are given below.

NEURASTHENIA AND ALLIED DISABILITIES

At this date (Dr. Hebb writes) a case of uncomplicated true war neurosis is rarely seen. A large majority of the cases dealt with during the year belong to the group of constitutional psychopaths and neuropaths for whom entitlement of attributability had been given by the Ministry and a heavy liability by way of pension already accepted. For the most part it seems probable that these cases could not in any circumstances have made a successful adaptation to the conditions of post-war life. Some of them remain permanently unemployed or are employable only under sheltered conditions. Many of them obtain casual employment from time to time, but very quickly break down when subjected to economic stress, and make

[1] **London**: George Allen and Unwin Ltd. 1935. (Pp. 168. Cloth, 5s. net; paper, 3s. 6d. net.)

repeated applications for hospital treatment or increase of pension. Prominent among those now coming under review are the cardiac and gastric neuroses, which conditions were induced by illnesses during the war and have proved most resistant to treatment. Special difficulty has been experienced both from the point of view of compensation and of treatment in cases of hysteria of late onset among men who had received gunshot wounds and still retained foreign bodies. These cases are becoming more frequent, and experience has shown that removal of the foreign body is rarely attended with beneficial results, and that the hysteria is, in effect, a compensation neurosis.

There was a marked decrease during the year in the number of those recommended for admission to hospital. Of the various factors which contributed towards this reduction the most important were: (1) that most of the cases have already had many periods of hospital treatment; (2) the increasing experience of the D.Cs.M.S. in selecting suitable cases and excluding those unlikely to benefit further; and (3) the shortening of the duration of treatment, due partly to the disinclination of those who are ineligible for treatment allowances to remain in hospital when no financial benefit is to be gained thereby, and partly to the fact that in the case of the psychoneurotics now being admitted to hospital it has been found that the maximum benefit is attained after about two months' treatment, and that further retention only does harm by inducing hospitalization.

Further cases of epilepsy showing progressive deterioration were noted during the year, but the number of fresh cases admitted as requiring institutional supervision was offset by the number who had to be certified under the Lunacy Act and transferred to mental hospitals. One or two cases of epilepsy were brought to notice in which the actual onset of fits was more than twelve years after the receipt of a penetrating gunshot wound of the head with intracranial injuries. The experience of the Ministry tends to show that there may be no limit to the number of years which may elapse before the date of the wound and the onset of epilepsy.

Diabetes in War Pensioners

The following remarks are based on the experience obtained in the treatment and observation of approximately 400 diabetics. So far as is known there have been no deaths in the past twelve months among diabetic pensioners in whom death could be directly attributed to the diabetes alone. Such deaths as have been traced have invariably been due to vascular diseases such as coronary thrombosis, etc.

As far as is known, experience with insulin among Ministry cases is on a par with experience elsewhere—that is, every case of true diabetes mellitus needs this preparation if the progress of the disease is to be held in check. Many elderly diabetics appear to exist comfortably on dietetic treatment alone, but experience shows that progressive deterioration in such cases does take place insidiously, but is stayed, even among the elderly, if adequately controlled by insulin.

It has been possible to treat a few cases, apparently from the outset, in men who have been found to be suffering from diabetes while under treatment for some other disability which has been accepted by the Ministry. This particularly refers to cases of recurrent sepsis in old gunshot wounds, in whom control of the diabetes was a *sine qua non* for the treatment of the surgical condition. While on the subject of insulin, the advantage of multiple smaller doses over one or two larger doses in twenty-four hours may be emphasized. Naturally, a patient does not like frequent hypodermic injections, but many of the severer cases have decided for themselves that they feel so much better and use so much less insulin in the form of repeated small injections that they voluntarily continue this treatment. It has been the practice among our pensioners for many years past to divide the morning dose of insulin into two portions, of which the smaller is taken at the moment the patient wakes, and the larger when he has his breakfast. This has been attended by most satisfactory results. The blood sugars have been kept within normal limits, and both early morning hyperglycaemia and midday hypoglycaemia avoided on a total dose of insulin materially less than the larger single dose, which often failed to control the blood sugar. The explanation, probably, is that insulin is more active in preventing hyperglycaemia through excessive glycogenolysis than in condensing hexose which has already entered the blood.

In brief, it may be said that with the giving of insulin, and our greater knowledge of how to use it, all our previous ideas on the subject have been revolutionized. There is no doubt whatever that fats lower the carbohydrate tolerance of diabetics and are antagonistic to the action of insulin. While our practice does not proceed to the extent of cutting out completely all fat from the diet of a diabetic, as is recommended by Rabinowitch in Montreal or by Leyton in London, it is found that the elimination of as much fat as possible from the diet results in an enormously increased carbohydrate tolerance and a much greater efficiency of insulin. The majority of the Ministry patients are now on a diet in which carbohydrate is to fat as about 2 to 1 or even 4 or 5 to 1. A curious thing which has been noticed in all diabetics is how they maintain their body weight and working energy on a diet which, in total calories, is far below the theoretical requirement.

Syme Amputations

It has now become possible to consider the Syme amputation in the light of statistics—not very extensive, it may be, but sufficiently so to be of considerable value. In June, 1924, the amputation cases living within the area served by the Ministry of Pensions Limb-fitting Centre at Roehampton were classified according to the site of the amputation, and it was found that there were fifty-four cases of Syme amputation. A recent review of these fifty-four cases shows that in thirty-seven of them there has since been reamputation to a "below knee" or "above knee" stump. Of these thirty-seven cases, fourteen had never been able to take any form of end-bearing. As regards the twenty-three that had taken end-bearing in one form or another, the length of time they were able to do so is as follows:

1	took	end-bearing	for	16	years
1	,,	,,	,,	14	,,
2	,,	,,	,,	13	,,
1	,,	,,	,,	12	,,
1	,,	,,	,,	11	,,
1	,,	,,	,,	10	,,
4	,,	,,	,,	9	,,
1	,,	,,	,,	7	,,
4	,,	,,	,,	6	,,
2	,,	,,	,,	5	,,
1	,,	,,	,,	4	,,
2	,,	,,	,,	3	,,
2	,,	,,	,,	period uncertain	

In the opinion of the limb-fitting surgeons several of these cases should have undergone reamputation some years earlier than they actually did. The men were, however, so reluctant to submit to further operation that they chose to continue in admitted discomfort for some considerable time, although ultimately they asked for the operation to be performed. This period of postponement is, of course, reflected in the above figures, which tend, therefore, to convey a more favourable index of the duration of comfortable serviceability of the Syme stump than surgical opinion in fact supported. It is now customary at the Limb-fitting Centre for Syme cases, including those in which full end-bearing may be possible, to be fitted with their appliance in such a way that much of the weight is borne from just below the knee, and with but one or two exceptions the seventeen cases (out of the fifty-four referred to above) which still retain the Syme stump are fitted in this way. The effect is to diminish proportionately the pressure upon the end of the stump, and while admittedly this method largely disregards the main object of the Syme amputation, it is believed to be the explanation of why these cases have retained the Syme stumps for

so long. The expectation that the method might entirely obviate further amputation has, however, not been entertained, and it has in fact already been deemed necessary in three of the cases to urge the man to submit to further amputation, although so far without success.

A consideration of the above figures obviously still leaves room for two opinions regarding the advantages and disadvantages of the Syme stump. Surgeons who regard the Syme amputation with favour may contend that during the Syme period the man enjoys an advantage which is not subsequently outweighed by the fact that he has had to undergo further amputation at a later date. Those who do not regard the Syme condition with favour may contend that the amputee's interest would have been better served by an original operation leaving a 6-inch to 7-inch stump below the knee-joint. As has been said, those are matters of opinion, but at least the figures lend strong support to the view expressed by Mr. Max Page and supported by Mr. P. J. Verrall, at the meeting of the Surgical Section of the Royal Society of Medicine in April, 1930, that the Syme amputation fails to bear the test of time. In carrying out this investigation it has not been overlooked that one of the comments made regarding the view that the Syme amputation does not bear the test of time was that where there is a history of prior sepsis further trouble is to be expected, that such a history is likely in cases of war injury, and that deductions legitimately drawn from cases of war injury are not a safe guide as to the merits of the Syme amputation *per se*. Among the thirty-seven cases of reamputation mentioned above, all of which were war injury cases, ten only had a history of prior sepsis. It is not possible to give corresponding figures of civilian cases, but many civilian cases of amputation resulting from accident or disease attend for limb-fitting at the Roehampton centre, and experience has not suggested that cases of sepsis are less frequent among them than among war cases. No ground, therefore, has been found to support a contention that conclusions drawn from an experience of war cases require modification in their application to cases of civilians.

JEJUNAL ULCERATION

Between forty and fifty cases of jejunal ulceration have been dealt with at Roehampton during the past few years as a complication of gastro-enterostomy. No single causative factor has emerged, beyond the general impression that there is a certain type of individual who is prone to peptic ulceration. The type of anastomosis performed appears to make no difference. Cases occurring with a posterior anastomosis are more common, but then this type of operation is far more frequently done than the anterior one. The length of loop also appears to be immaterial, except in so far as a long loop makes subsequent treatment of a jejunal ulcer, should it occur, a more easy procedure than a no-loop anastomosis. The position of the ulcer varies. The majority occur at or near the actual stoma, but some have been seen in the efferent loop, and in one case an ulcer occurred about two inches up the afferent loop. In eight cases the ulcerated area became adherent to the transverse colon, and eventually a gastro-jejuno-colic fistula was established. The majority of jejunal ulcers occur within a short time after the original operation, but not often after two years. Diagnosis is largely a clinical one, *x*-ray examination being, as a rule, very inconclusive. A curious U-shaped residue has been seen in a number of cases, the U opening downwards and to the left. This appearance is seen one to two hours after ingestion of the opaque meal, and has been seen too frequently in cases which subsequently proved to be definite ulcers for it to be considered as having no significance. The cause of this shadow is not clear. Haemorrhage of any extent from jejunal ulcers is rare, and perforation, except into the colon, is also an uncommon occurrence. The eight cases which went on to colic fistulae are interesting, in that all but one could tell the very day when the fistula occurred, by sudden cessation of pain and rapid onset of diarrhoea, true faecal vomiting, and foul eructations. These patients soon become very anaemic.

The general treatment of cases of jejunal ulcer has been to excise the ulcer and restore the continuity of the stomach and jejunum, having previously made certain that the pylorus is patent. This was so in all the cases, although some had been occluded by a ligature at a previous operation. The results of this treatment were good in the majority of cases. Some, however, responded by a reactivation of the original duodenal ulcer. Where this occurred a partial gastrectomy was done, this operation being more easily performed at this stage of the patient's history than when the jejunal ulcer was being operated upon. In the cases of gastro-jejuno-colic, restoration of continuity was also the operation of choice, the fistula being excised and the three involved viscera being sutured. The results were good, but recently one of these cases had returned with evidence of fresh duodenal ulceration.

VARICOSE ULCERS

The year under review has provided still further evidence of the good results attending the "elastoplast" method of treatment of chronic varicose and other ulcers. So successful has this treatment been that during the past year about five thousand bandages were used in Ministry cases, and this figure affords some idea of the number of cases. It is an essential part of the method of treatment by elastoplast bandage that the patient should get about as usual and carry on his avocation. The changing of the bandage should be infrequent, and it should be left on from one to two weeks, or even longer. Large numbers of these ulcers were healed and have remained healed, but in certain cases injection of varicose veins has been resorted to in addition to the application of the bandages. In some, in order to prevent a recurrence, it is necessary to afford more or less continuous support, and an adhesive bandage such as the elastoplast is found to be as useful as anything. The experience gained in respect of varicose ulcers led medical officers to use these bandages for other conditions. Ulcers dependent upon tissue damage due to old gunshot wounds (without any varicose veins) were found to heal in the same remarkable way, and abrasions on amputation stumps at points of friction with sockets of artificial limbs heal rapidly with the application of a small piece of elastoplast bandage, while the artificial limb is still being worn.

ANAESTHESIA

During the past year evipan has been used by the Ministry. The first Ministry hospital in which this method of anaesthesia was used was Rookwood, and a report rendered by that hospital in October, 1933, detailing its experience in the first nine cases, was circulated to the other Ministry general hospitals for their information. Since that date the preparation has been employed at Roehampton (thirty-five cases) and at Rookwood (seventy cases). In thirteen of the thirty-five Roehampton cases it was used as a precursor to other anaesthetics, such as gas and oxygen or ether. The reports show that in the majority of cases the anaesthesia is quiet and complete, and that recovery is rapid and uneventful. In only one case has there been any respiratory difficulty, when artificial respiration and the injection of restoratives became necessary. No other case in the series gave rise to any alarm, nor were there any unpleasant after-effects.

A high proportion of the operations performed at the Ministry's hospitals are of short duration, such as the incision and drainage of inflammatory processes around old gunshot wounds, removal of foreign bodies, and excision of scars and the like, and there is no doubt that in these the advantages of an anaesthetic such as evipan are considerable. Whether the advantages are sufficient, and the margin of safety is adequate, to justify the replacement of the time-honoured methods of gas or gas and oxygen remains to be seen. What has been shown during the past year is that pensioners have become aware of the simplicity of administration and the lack of after-effects of this anaesthetic, and have accordingly expressed a preference for its use—sufficient proof that the pensioner has not lost that power of discrimination which he developed when on active service!

British Medical Journal

SATURDAY, MARCH 2nd, 1935

MEDICAL RESEARCH COUNCIL

The wide scope of research which is now fostered and supported by the Medical Research Council makes it difficult to summarize a year's activities except in the detailed way followed in the Annual Report of the Council's work now available for the year 1933-4.[1] Elsewhere in this issue (p. 432) sections of the report are described in some detail, and here an attempt will be made to outline the general trend of research which proceeds at centres as wide apart as Zanzibar (where a Dorothy Temple Cross Research Fellow has been working) and Aberdeen, with the co-operation of somewhere in the region of a thousand scientific workers whose names are indexed at the end of the report. Outstanding in the past year have been the steady development of clinical research in organized units, the steps taken in elucidating the influenza problem by infecting mice, the discoveries of the chemical control of the nervous system, and the elaboration of medical statistics along lines as apparently unrelated as the inheritance of disease and the prevalence of road accidents. Of the developments in clinical research work there is little that calls for comment, since the facts of the new appointments—to the unit at Guy's Hospital, and to fill the post at Sheffield vacated when Professor E. Mellanby became secretary of the Council, and other changes—have already been noted as they became known. The progress made possible in the elucidation of the influenza problem by the discovery of the susceptibility of mice to the virus previously inoculated with success into ferrets, and the protective powers of serum obtained by immunization of the latter, has led to a clearer understanding of the disease, although the report forestalls optimism by a warning that "the work does not give any immediate prospect of practical applications to the control of human influenza."

A fascinating chapter in physiological and medical science now being rapidly disclosed concerns the part played by specific chemical agents in the control of the nervous system. The exact role of acetylcholine and possibly other substances in the mechanism of nervous activity is becoming clearer as the whole drama grows more complicated. Not only must there be a specific chemical effect at the periphery, but the passage of the nervous impulse from one nervous element to another involves similar chemical actions and reactions. The days of the old "telegraph" analogy of nerve impulse are already over; and, to add to the complexity, the part played by the vitamins is now brought in. Work at Sheffield, in which the present secretary was originally concerned, goes to show that in young animals vitamin A is essential for the maintenance of the proper structure and function of the nervous system. The lesions in the cord and elsewhere found in vitamin A deficiency are "almost identical" with those found in subacute combined degeneration, nervous ergotism, pellagra, and lathyrism. At Oxford the part played by vitamin B in the nervous system has also been linked up with chemical changes, for it has been shown that in the absence of vitamin B parts of the brain become incapable of oxidizing carbohydrate completely, with the result that lactic acid accumulates and dire results follow, involving the collapse and early death characteristic of lack of this vitamin.

After these revolutionary changes in the outlook on the intrinsic mechanism of the nervous system, the statistical explorations described in the report strike an unusually calm note. Epidemiological research and the investigation at present proceeding into the incidence of consanguineous parentage among large groups of cases of particular diseases or defects promise important results in the future. The application to the problems of road accidents of the results obtained earlier in industry concerning "accident proneness" opens up an immediate possibility of an almost too simple solution of a complicated and controversial problem. Just as in industry, where in a large number of individuals exposed to the same risks 75 per cent. of all the accidents are sustained by only about 10 per cent. of the group, so in the matter of road accidents a statistical examination of certain records reveals that in a selected group of drivers some individuals are more liable to accidents than others, including all minor accidents and those for which the driver was not held to blame. The statistical effect of eliminating the records of such drivers is to reduce the accident rate, and the practical application of this theoretical exercise is all that remains to be done! It is outside the Council's purview to suggest the steps along which action might be taken, but the elimination of those whose car insurance records stamp them as having an inborn "accident proneness" suggests that a reduction in road accidents might lead to traffic congestion in the courts of law while disqualified drivers were seeking reinstatement or compensation.

This is the second report of the M.R.C. to bear Edward Mellanby's name, and it is already clear that Walter Fletcher's ideals and ambitions are being maintained. The Walter Fletcher Laboratory, contemplated at the farm premises at Mill Hill, will not only perpetuate the name of the first secretary of the Council, but will afford added scope to the nutritional studies to which he gave so much personal attention and to which so much of the present report is devoted.

[1] Report of the Medical Research Council for the Year 1933-4. H.M. Stationery Office. (2s. 6d. net.)

AGRANULOCYTOSIS

It is now thirteen years since Schultz first described a condition characterized by widespread superficial necrosis of the oral and pharyngeal mucosa and an almost complete absence of granular leucocytes from the blood. Although gaining recognition in Germany, Scandinavia, and particularly in the United States, it remained unrecognized in this country until 1929, when a case was described by Batten,[1] and is still not familiar enough in English minds to ensure frequent diagnosis. This disease, which came to be known as "agranulocytic angina," had a high mortality, and its cause was entirely unknown. Some authors took the view that infection was primarily responsible for the failure of the leucocytogenic function of the bone marrow, although no characteristic micro-organism was demonstrable in the mouth lesions; others that the marrow failure was primary, and that the visible lesions were the consequence of failure of the ordinary defensive mechanism, normally saprophytic bacteria attacking the tissues in a situation where they are always present in abundance. This view was supported by two single but interesting observations: the first was a recurrent case reported by Roberts and Kracke,[2] in which repeated blood counts enabled them to observe that extreme granular leucopenia preceded the appearance of symptoms and lesions in the second attack; and the second was a case described by Buck,[3] in which the characteristic areas of spreading necrosis developed not in the mouth and throat but in the anus and rectum, another situation more liberally provided than any other part of the body with bacteria capable of attacking unresisting tissues.

That this second view is the correct one is proved by the startling developments of the past two years. During this period over one hundred cases of typical agranulocytic angina have been observed to follow the administration in normal therapeutic doses of amidopyrine. Among recent reports are those of Plum,[4] who records seven cases occurring in Copenhagen, with six deaths, and of Holten, Nielsen, and Transbol,[5] who observed six cases, also in Denmark, all of which were fatal. Of numerous similar reports from the United States, the principal is that of Madison and Squier,[6] based on fourteen cases with eight deaths. From these it is abundantly clear that the administration of amidopyrine in what is considered correct dosage may produce extreme granulocytopenia; both Madison and Squier and Plum have verified this by experimental administration to patients who had recovered, a single dose being followed within a few hours by a profound fall in the number of granular leucocytes in the blood. It is therefore quite certain that a large proportion of recent cases of agranulocytic angina can be traced to this cause, and equally uncertain how many of the earlier cases are to be explained in the same way, since histories are not likely to include particulars of mild sedatives taken for headache, dysmenorrhoea, or climacteric disturbances before the importance of this factor was known. Naturally patients who react in this way—at least to this extent—are exceptional. Why they do so is unknown; and whether on their account the use of amidopyrine should be discontinued altogether is a matter on which there appear still to be two opinions. It has been suggested, for example, that administration is permissible if controlled by blood counts. Herz,[7] who discusses the chemical structure of drugs of this class in relation to their toxicity, condemns amidopyrine outright. Whatever action may ultimately be taken about this, it should at least be recognized as widely as possible that the use of this drug may be dangerous. It is known chiefly in this country under the name of pyramidon, and preparations containing it, all of which have been responsible for recorded cases of severe or fatal agranulocytosis, include allonal, veramon, cibalgin, diallylpyrine, geamin, klimaxid, prokliman, and sedalyl.

In face of these developments it may well be asked whether all cases of agranulocytic angina are not due to the action of some exogenous poison. Only further observations can decide this, now that the action of this drug, as well as of such other possible causes of granular leucopenia as benzol, salvarsan, and sanocrysin, is gaining recognition. If future cases appear in which no such exogenous cause can be found, then the hypothesis developed by Miller and Rhoads[8] may be of practical interest. These authors had previously[9] studied a condition in dogs known as "black tongue," which can be produced by a diet deficient in vitamin B_2 and is regarded as an equivalent of pellagra. By a suitable adjustment of the diet they were able to maintain this disease in a chronic form, characterized, among other features, by stomatitis and anaemia. They now report that mouth lesions may arise which are closely similar to those seen in agranulocytic angina; that these are accompanied by severe leucopenia; and that in such animals the bone marrow shows clear evidence of suppressed leucocytogenic function. In spite of certain minor differences there is a distinct analogy between the termination of this experimental disease and agranulocytic angina in man. Does this mean that a specific dietetic factor is necessary for the maturation of leucocytes, as it is for that of red cells? This is no more than possible, but it is at least a hypothesis to be borne in mind in future investigations of the human disease.

The chief practical lesson to be deduced from all these studies is that a blood count should be performed on every case exhibiting fever, prostration, and a necrosing stomatitis or pharyngitis. The characteristic lesion consists of white patches resembling thrush, which rapidly spread and coalesce; it is quite conceivable that milder cases may occur with less extensive lesions

[1] *Lancet*, 1929, i, 440.
[2] *Journ. Amer. Med. Assoc.*, 1930, xcv, 780.
[3] Ibid., 1929, xciii, 1468.
[4] *Lancet*, 1935, i, 14.
[5] *Acta Med. Scand.*, 1934, lxxxiv, 45.
[6] *Journ. Amer. Med. Assoc.*, 1934, cii, 755.
[7] *Journ. Lab. and Clin. Med.*, 1934, xx, 33.
[8] *Journ. Exper. Med.*, 1935, lxi, 173.
[9] Ibid., 1933, lviii, 585.

and less constitutional disturbance. Only when this becomes a universal practice will the true incidence of the disease be known and the further studies completed which are necessary in order to elucidate fully its aetiology.

PROLAN

The method used by the endocrine system to produce its effects is the chemical one of secreting potent compounds, and the pituitary seems mainly concerned with sending out such compounds to activate other glands, or, in some cases, even to inhibit their activity. Among these potent chemical products of the pituitary is prolan, which is secreted by the anterior lobe. This secretion is usually thought of in relation to the activities of the ovary, but more recent work has proved that it is connected with the accessory sex organs of the male. By a fortunate circumstance this active secretion from the anterior pituitary, or something closely resembling it, is excreted in the urine of pregnant females, so that it is readily available for study. It is the presence of this substance in the urine during pregnancy which is responsible for the Aschheim-Zondek and Friedman tests for pregnancy. On purely *a priori* grounds one might deduce what some of the actions of prolan ought to be, granted that the functions of the ovary are under its control. Maturation of the ovum and follicle, discharge of the ovum, formation of the corpus luteum, are among these functions, and in conformity with them we find that prolan consists of at least two components—A and B. Prolan A controls the mechanism of follicular maturation, whilst prolan B controls that of luteinization. Some observers are doubtful about this distinction, but separation of the two constituents has recently been attained. In the male infant animal, prolan A is apparently without effect, but prolan B has a strong stimulant action on the development of the penis, on the descent of the testes, and on the seminal vesicles ; the testes develop rapidly under its influence, but, whilst showing great growth of interstitial tissue, there is never any spermatogenesis. Here we have a distinct lead for the clinical application of prolan B in conditions of hypofunction or delayed development of the male genital tract. From reports in the literature it looks as if prolan B may not itself be adequate for the establishment of sexual maturity in the male. Some observers have found that descent of the testes in cryptorchidism is sometimes brought about by injections of the extracts obtained from pregnancy urine—a very remarkable finding, providing as it does, if substantiated by further work, a great advance on surgical measures, which, in fact, are not altogether satisfactory. The action of prolan B appears to be less simple than was at first thought, because it is found that if injected alone into immature mice it will not lead to luteinization: preliminary treatment with prolan A is essential, and according to A. Brindeau, H. Hinglais, and M. Hinglais,[1] the latter contains, in addition to the maturation hormone, a sensitizing hormone which so acts upon the follicle that prolan B can bring about active luteinization. That is to say, that with certain extracts it is possible to induce luteinization of the follicle without any sign of maturation. Zondek had indeed noted that in certain cases luteinization could be so rapid that the ovum was trapped in the follicle, and he took the view that this was due to a quantitative excess of prolan B. The more recent observations by the above-named workers show that the more rational explanation, on experimental grounds, is that the effectiveness of prolan B depends upon the presence of a sensitizing substance which prepares the follicle for luteinization. Since the hormone of the corpus luteum is responsible for the preparation of the uterine mucous membrane for nidation of the fertilized ovum, it is clear that the demonstration of deficiencies in the sensitizing agent of prolan A may contribute to our knowledge of peculiar cases of infertility. Much remains to be done, particularly in the direction of clarification of the mode of action of these hormones as distinct from their end-effects ; but we can scarcely doubt that the application of the various pituitary hormones in therapy will soon be placed on a rational basis.

[1] *La Presse Médicale*, October 24th, 1934.

TREATMENT OF CONCOMITANT SQUINT

Recognition of the significance of derangement of stereoscopic vision as a cause rather than the result of squint goes back to the sixties of the last century, when Javal did pioneer work on the subject. But Javal's advocacy was swamped by the teaching of Donders, whose demonstration of the disproportion between accommodation and convergence in high hypermetropes was very nearly the first definite fact elicited in the pathology of squint. To an age which was straining at interpreting everything in terms of the concrete and material, Donders's emphatic conception was more attractive than the rather speculative views of Javal, and it was only at the beginning of this century that the significance of fusion was clearly established by the work of Worth. Since then there has been a steady retreat from the position of those who regarded local factors in the eye as the cause of squint, so that the cerebral mechanism of binocular vision has become an aspect of steadily increasing importance. The changed outlook that has come about during the past few years has left the subject at the present moment very much in a state of flux—so much so that almost every cherished dogma is being questioned. Characteristic of this state is the teaching of Cantonnet in the latest and most exhaustive monograph on the subject. It had been held as definitely established that an attempt to develop fusion in children over the age of 5 is useless. Cantonnet swings to the other extreme, and holds that older patients, with their more developed intelligence, are better subjects for fusion training. This view is supported by Dr. George P. Guibor in a paper read before the Section of Ophthalmology at the last annual session of the American Medical Association.[1] Of particular interest in Guibor's paper is a classification of squint which has much to commend it as a practical approach, particularly from the point of view of treatment. He recognizes eight types of squint. Under the heading of pseudoparalysis he places those cases of bilateral convergence seen in infants: the eyes appear immobile and abduction cannot be elicited. These cases are often diagnosed as bilateral abducens paralysis, but, as Guibor points out, instillation of

[1] *Arch. of Ophthal.*, December, 1934, xii, 887.

atropine produces a marked alternating squint with power of abduction. He reserves the term " accommodative squint " for cases in which the squint diminishes or disappears under atropine and full correction ; the diagnosis of this type is confirmed by the satisfactory response to this simple method of treatment. In contrast to this group is strabismus due to fusion defect, a condition particularly prevalent in alternating squint. Often the refractive error is insignificant and vision is full in each eye. The fusion faculty is not necessarily completely absent and can be developed in many patients ; fusion training is therefore of definite value in this group. Squint associated with amblyopia calls for a different approach, for here an attempt should be made to improve the vision of the squinting eye by varying degrees of occlusion of the good eye. One group of much interest brought out by Guibor is squint due to muscular abnormality. He points out that, when a squint persists in spite of refraction, atropinization, and orthoptic training, an abnormality of this kind is suggested. He holds that such muscle abnormality can be proved by mapping out the motility of the eyes binocularly and monocularly. The patients show good abduction binocularly but poor ability to maintain a monocular position of abduction after five seconds, as shown by slow nystagmoid movements or by the appearance of one millimetre or more of the sclera between the external canthus and the limbus of the eye that has defective motility. Guibor also recognizes three other groups—one in which there is no true squint but a wide angle gamma ; a second in which the squint may be caused by differences in the size of the retinal images in anisometropia ; and a final group which is due to the combination of several conditions. In analysing his results in treatment of squint, Guibor unfortunately has not utilized his own classification, so that the value of his paper rather suffers in an important respect. But that we are still far from any conclusive views on squint is apparent from two other contributions in the same issue of the *Archives*. Dr. J. B. Lordan[1] devotes an article to operative technique, thus once more emphasizing that practically each individual surgeon has his own method of operation, whilst Dr. F. H. Rodin[2] returns to another puzzle in squint—familial incidence. In an earlier communication this author reported squint in a mother and the three youngest children in a family of nine, and his present communication reports squint in the three youngest children in a family of seven. To conclude from this that the place of the children in the family has a bearing on the development of squint would of course be unjustifiable.

THE WORD SYPHILIS AND ITS INTRODUCER

Those interested in the history of medicine, and especially of syphilis and the much-debated question whether it was brought from America by Columbus's sailors or (as Sudhoff argued) it existed though kept secret in Europe before the fifteenth century, will much appreciate the scholarly translation[3] of Fracastorius's famous poem, *Syphilis, Sive Morbi Gallici, Libri Tres*, by Mr. Heneage Wynne-Finch. In a prefatory note on the history of the poem the translator points out that it was not the first poem on the subject, for Francisco Lopez de Villalobos brought out in 1498 a Spanish poem on *las pestiferas bubas*. From Professor John Fulton of Yale, who, with Dr. L. Baumgartner, is preparing a *Bibliography of Fracastoro*, he has received help on a disputed point in the text, and he acknowledges his indebtedness to the late Mr. H. E. Powell of the Royal Society of Medicine, whose death so many authors regret as a very ready helper in their literary labours. In a short essay on " Fracastor and Virgil " Mr. Vernon Rendall shows the junior's debt to his senior, and assures the reader that he will be surprised at the ingenuity of the verse of this sixteenth century classic, adorned with the grace and charm of Virgil. In his introduction of thirty-nine pages Mr. Johnston Abraham pleasantly covers the wide field of the history of syphilis, its names in different countries which reflect the enmities of the past, the life of the poem's author, and the treatment, ancient and modern, of the disease called after the shepherd Syphilus, who was thus punished for neglecting the worship of Apollo, but after confessing his impiety was cured by a decoction of the sacred tree guaiacum.

BIRTH CONTROL REPORTS

Year by year the reports of societies interested in birth control, and those of individual birth control clinics, inform us as to the position of this movement. This year, as on previous occasions, the most important of these reports come from the National Birth Control Association, with its associated Birth Control Investigation Committee, and from the Society for the Provision of Birth Control Clinics, issued from the Walworth Women's Welfare Centre. They are somewhat briefer and less informative than usual this time, and consist almost entirely of the details of financial support and expenditure and of lists of their local branches or affiliated centres. To many it will be disappointing to be told so little of the work of the scientific and authoritative Birth Control Investigation Committee, of which Sir Humphry Rolleston is the chairman. It is merely said that the work of the committee has proceded satisfactorily during the year and that certain investigations are being continued or undertaken. Moreover, there are certain phrases in each of these reports which to some persons will be disquieting as indicating a possible misapprehension of the main purpose of such clinics or some misdirection of their energies and activities. Both reports refer appreciatively to the circular issued from the Ministry of Health in May last authorizing local authorities to extend the work of any clinics that they have established, or may establish, so as to afford contraceptive advice to married women who are found to be suffering from any condition, physical or mental, " if it is found medically that pregnancy would be detrimental to health. What is or is not medically detrimental to health must be decided by the professional judgement of the medical practitioner in charge of the clinic." Certain relatively minor administrative difficulties may arise from this pronouncement, but most persons will agree that no exception can properly be taken to it as indicating an official opinion as to a wise limitation under which the work

[1] *Arch. of Ophthal.*, December, 1934, xii, 843.
[2] Ibid., December, 1934, xii, 874.
[3] *Frascator: Syphilis or the French Disease. A Poem in Latin Hexameters.* By Girolamo Fracastoro. With a translation, notes, and appendix by Heneage Wynne-Finch, M.A., and an introduction by J. J. Abraham, M.D., F.R.C.S. London: William Heinemann (Medical Books) Ltd. (10s. 6d. net.)

of the clinics should be carried on. Birth control enthusiasts, however, are not content with this, but urge their panacea as one which will cure most social ills and abolish maternal mortality. It is said, "There is urgent need for more voluntary clinics to relieve the economic distress caused by unemployment, low wages, and overcrowding"; and, again, "to remedy a state of affairs which no one who has studied the statistics of maternal mortality or who is familiar with the health conditions of the mothers of the race can regard without alarm." A pamphlet issued by the Birth Control International Information Centre, entitled *Woman of the Future* and containing a sketch of the work of Margaret Sanger and an article by her, seems to envisage similar objects even more widely, and is certainly worded more flamboyantly. We are told: "Only through birth control will women gain control of their bodies or develop their souls. Only through a new consciousness of birth can humanity at large ever extricate itself from the man-made muddle in which it is grounded to-day." To more sober-minded persons it will probably appear that there are other and more effective methods of eradicating these economic and social evils and of achieving this world-wide emancipation.

SNAKE VENOM IN THERAPEUTICS

The ancients felt that an animal which produced such potent poisons as did the snake must also have therapeutic virtues. They therefore employed viper's flesh as a remedy, and their choice was approved by clinicians for 2,000 years. Fashions and modes of thought changed, however, and viper's flesh vanished from the pharmacopoeias during the eighteenth century. In recent years attention has been paid to the possible therapeutic uses of the remarkable poisons contained in the venom of snakes. American workers (Peck *et al.*)[1] [2] showed in 1932 that intradermal injections of snake venom produced beneficial results in haemophilia and purpura. Recent work in this country (MacFarlane and Barnett)[3] has shown that the diluted venom of Russell's viper is an extraordinarily efficient haemostatic for local application in haemophilia and in cases with coagulation delayed for other reasons. French workers have discovered another and completely different use for snake venom. In 1929 Monaelesser noted that a leper bitten by a snake obtained relief from pain, and the use of injections of snake venom as an analgesic in cases of inoperable malignant disease has been studied by various workers. The late Professor Calmette also tried the action of cobra venom in checking the growth of adenocarcinomata in mice. This work has been reviewed by Ravina,[4] who points out that the venoms can only be used safely if their activity is controlled by biological tests. Whether they do in fact check malignant growth appears doubtful, but there is a general agreement about the analgesic effect. In some cases the venom is stated to have rendered the use of morphine unnecessary. The need for great care in the use of snake venom is indicated by a recent fatality following the injection of 5 mouse units,[5] and in a discussion on this subject other instances of toxic effects and deaths have been reported.[6] The incidence of intoxications with psychic disturbance was estimated at about 1 per cent., and the wide individual variation in response was noted. Finally, it was agreed that the combination of iodine or iodides with cobra venom was dangerous. Recent experimental work in India[7] emphasizes the need for biological standardization, for it was found that the activity of dried cobra venom (*Naia naia*) decreased on keeping. In one case the toxicity decreased to about one-seventh in the course of a year. The exact nature of the analgesic action of cobra venom is obscure. The venom has local anaesthetic properties, but also a marked curariform action on motor nerves, and produces death by paralysis of the respiratory centre.

[1] Peck, S. M.: *Proc. Soc. Exp. Biol. and Med.*, 1932, xxix, 579.
[2] Peck, S. M., and Goldberger, M. D.: *Amer. Journ. Obstet. and Gynecol.*, 1933, xxv, 887.
[3] MacFarlane, R. G., and Barnett, B.: *Lancet*, 1934, ii, 985.
[4] Ravina, A.: *Presse Méd.*, January 3rd, 1934, p. 4.
[5] Buvat, Le Gac, and Mauvoisin: *Bull. et Mém. de la Soc. de Méd. de Paris*, 1934, cxxxviii, 577.
[6] Taguet, C.: Ibid., 1934, cxxxviii, 610.
[7] Venkatachalam, K., and Ratnagiriswaran, A. N.: *Indian Journ. Med. Research*, 1934, xxii, 289.

VITAMIN STANDARDS

The provision of international standards for drugs requiring biological standardization is one of the many useful activities of the Health Organization of the League of Nations. Standards for vitamins were fixed at an international conference in 1931 and these were revised at a second conference in 1934. No change has been made in the standards for vitamins B and D, but those for vitamins A and C have been improved. It was decided to be impracticable to fix international standards for any other vitamins. It is of interest to note that although vitamins A, C, and D have all been identified as substances of known chemical composition, yet the conference agreed that the cumbersome method of comparing the biological activity with that of a chosen standard was still necessary; the hope was expressed, however, that this would soon be superseded by methods of chemical analysis. The standard preparations will continue to be kept at the National Institute for Medical Research, Mount Vernon, Hampstead.

CHARLES MICKLE FELLOWSHIP

The Senate of the University of Toronto has awarded the Charles Mickle Fellowship for 1935 jointly to Dr. Edward Mellanby, F.R.S., and Mrs. May Mellanby. The Fellowship is endowed under a bequest by the late Dr. W. J. Mickle, and is awarded annually "to that member of the medical profession who is considered by the Council of the Faculty of Medicine of the University of Toronto to have done most during the preceding ten years to advance sound knowledge of a practical kind in medical art or science."

A clock presented by Mrs. E. B. Turner, in memory of her husband, the late Mr. E. B. Turner, F.R.C.S., Chairman of the Representative Body 1915-17, has been set up this week in the circular space within the pediment of the main block of the British Medical Association's House in Tavistock Square.

TREATMENT IN GENERAL PRACTICE

This article is one of a series on the management of some of the major medical disorders met with in general practice

THE TREATMENT OF LUNG ABSCESS

BY

F. G. CHANDLER, M.A., M.D., F.R.C.P.

An abscess of the lung may begin insidiously or develop acutely, and it may be fully formed, with a fluid level, when help is asked. In any case, a preliminary course of medical treatment is indicated, as spontaneous cure is by no means uncommon. The patient should be nursed so far as possible in fresh air, subject to suitable conditions of weather and comfort to both patient and nurses. The importance of postural drainage should be realized. This should be thorough and rational, and to be so a knowledge of the exact site of the abscess and of the bronchus draining the abscess is essential. This can be ascertained by anterior and true lateral skiagrams, supplemented if need be by lipiodol injection. Rigid views of postural drainage, nevertheless, must not be allowed to override humane considerations. It is astonishing, however, how many patients will tolerate the head downward posture for long periods, on a suitable bed, such as that described by Mr. H. P. Nelson,* when the position of the abscess demands it. Steam inhalations of menthol and friars' balsam—a few crystals of the former and a drachm of the latter to a pint of boiling water—are soothing.

Relief of Cough

Something must be done to relieve the cough, which is often paroxysmal, distressing, and exhausting, without suppressing the cough reflex too much or inhibiting the action of the cilia, and without making the expectoration too tenacious to be brought up. This is often a great difficulty. Inhalations of menthol, friars' balsam, pine, etc., are helpful, but sometimes the cough is so intractable that the use of opium in some form is imperative—morphine, 1/6 to 1/4 grain; or heroin, 1/12 to 1/6 grain; or omnopon, 1/6 to 1/3 grain. If it is possible to avoid it it is better, and everything else should be tried. Cocaine sprays, acid. hydrocyan. dil. ♏ iv.–v, in repeated doses (for example, every three hours), watching for drowsiness, are to be advocated; and even thorough anaesthetization of the pharynx with 10 per cent. cocaine may be justifiable. A mixture of codeine bromoform and aconite may give relief—for example, syr. bromoformi co. (*B.P.C.*), ʒ iv or more three or four times a day, or codeine phosph., grain 1/4 to 1 repeated at intervals.

The relief of cough is specially emphasized as the patient may have sleepless nights, and besides wearing himself out with it may also spread the contents of the abscess into other parts of the lung. So important is this matter of the coughing that, although it is anticipating my later remarks, I would say that *if the cough is uncontrollable it is one of the indications for early operation.* Other medicines should be tried—for example, hexamine, gr. x, t.d.s.; creosote, ♏ ii–xv, t.d.s.; ipecac., ♏ v–vi, t.d.s.; sp. pin. (*B.P.C.*), ʒ i four-hourly; ol. terebinth. rect. (*B.P.*) in capsules, ♏ iii–v, three or four times a day; liq. arsen., ♏ iii–viii, t.d.s.; or injections of N.A.B., the rationale here being the presence in some cases of an enormous preponderance of spirochaetes and fusiform bacilli.

* *British Medical Journal*, August 11th, 1934, p. 251.

Various injections have been suggested, among them alcohol, but I cannot help thinking that the enthusiastic statements of its advocates lack the critical restraint that a fuller knowledge of the tendency to spontaneous recovery might have imposed. I believe that lipiodol injections orally, or by nasal catheter or the cricothyroid route, are of possible assistance towards the rapid spontaneous recovery of the abscess. If these measures fail, then I think a bronchoscopy under avertin and local anaesthesia should be advised, in the hopes that possibly freer drainage may be promoted by relief of the oedema of the bronchus, or some treatment of the granulation tissue, whether it be painting with cocaine, dilatation, or cauterizing. Should this do no good, I should not, I think, be inclined to advise further bronchoscopies. Strong claims have been made for short-wave diathermy, but I have had no experience of this as yet.

Indications for Operation

If the cough is uncontrollable and too distressing, then early operation is indicated. Apart from this, I should prefer to wait three or four weeks if possible, to give nature a chance. If, after this time, there is no improvement, then I should advise operation, and in two stages if necessary—the first under a local anaesthetic and the second under gas and oxygen. This necessity would arise if the pleural layers were not adherent, when a first-stage operation would be necessary to make them so.

The operation should be a complete one, involving a large incision, resection of a considerable portion of (probably) two ribs, complete opening up of the abscess cavity (preferably by the diathermy cutting loop), opening up of all affected bronchi, all bleeding points to be stopped by the diathermy button, adequate drainage to be established, and the abscess not allowed to heal too soon.

In fact, I would rather the cavity and the wound were kept widely open until there was no trace of suppuration left. If the opening from the abscess cavity be allowed to close too soon then all the symptoms may recur. If the wound be allowed to heal prematurely then it may be very difficult to deal with the abscess if any residual suppuration should remain or any relapse occur.

Illustrative Cases

In the last few years I have seen many cases of lung abscess. Of twenty of these I have detailed notes. A consideration of them will serve to illustrate many essential points in the treatment. Of the twenty patients, three died, sixteen completely recovered, and one is still not well and has a discharging sinus.

Fatal Cases.—Of the three fatal cases one died of a cerebral abscess following a flare-up caused by a nurse at a convalescent home syringing out the sinus, supposing it to be a case of empyema. The second patient died because a one-stage operation was performed in spite of a strong request that the two layers of the pleura should be made adherent before the lung was incised: the lung fell away from the chest wall the moment the pleura was opened, a great quantity of pus was at once aspirated into the other lung, the patient went blue on the table, and only survived the operation a few hours. The third patient was a

man aged 34, who was operated on in February, 1931, five months from the onset of definite abscess symptoms. A two-stage operation was performed, a tube put in, and the wound allowed to close round the tube. He had a bad relapse. Bronchoscopic drainage and lavage of the cavity was performed four times, under local anaesthesia, but eventually it had to be reopened and drained. There persisted a discharging sinus. He became worse, and finally tubercle bacilli appeared in the sputum in large numbers, and he steadily declined.

CASES WITH RECOVERY

Of the sixteen patients who completely recovered seven got well without operation, treated on the lines already mentioned.

One was a woman of 50 with diabetes, blood sugar over 0.3, and a huge abscess in the left upper lobe. She was so ill that it was at first thought to be a neoplasm. A lipiodol injection was given, after which she made a rapid and complete recovery, and was seen perfectly well several years afterwards.

The remaining nine of the sixteen completely recovered cases were operated on. In one case a phrenic evulsion only was done ; in the others, thoracotomy and drainage—eight cases by a two-stage operation, and one case by a one-stage operation, as the lung was found to be adherent. The time elapsing between the onset of symptoms and operation was respectively fourteen days, one month, six weeks, two months, two and a half months, six months, nine months, nine months, and twelve months. Of the case with a persistent sinus I will give certain details.

She was a doctor's wife, who had definite symptoms, signs, and *x*-ray appearances of a lung abscess in January, 1930. A lipiodol injection was made in February. Five bronchoscopies were performed in June, but without cure of the condition. In the middle of September a two-stage operation was performed—that is, nine months after the onset of definite symptoms. This led to an enormous improvement, but not to a complete cure, for in November there was still some paroxysmal cough, occasional slight rises of temperature, and one to two drachms of purulent sputum per day. A finger was put into the cavity and sloughs removed. This caused a great improvement, but in January, 1931, the wound was still discharging some offensive pus. By March the patient was definitely better, but the tube has been kept in till this day—partly because the patient has a curious trick of swallowing things the wrong way, which it is thought may have caused the abscess. Through the drainage tube there comes orange juice, tea, chocolate, bread crumbs, and many other foodstuffs. Last year she developed arthritis. A large sinus persists, and the open ends of bronchi are visible.

Of the successful operative cases those patients who were operated on early made the quickest and most uneventful recovery. Operation was imperative, so it was not a case of *post ergo propter hoc*. Two cases of delayed operation may be quoted as they are instructive, and illustrative of special procedures, which may be necessary to complete the cure.

A child, aged 5, had had symptoms for over nine months. Neoplasm was suspected. The whole of the right upper lobe, however, was found to be one huge abscess. He was drained by a two-stage operation, and subsequently a phrenic evulsion was performed. From being moribund he was restored to comparative health. There remained a discharging sinus. Later a complete thoracoplasty was performed and the child made a full recovery.

The second was a lady, aged 52, whose abscess followed tonsillectomy in December, 1929. She was never well since, soon developing abnormal physical signs in the right side, and high fever. Symptoms such as purulent and offensive sputum did not develop until April, 1930. In July lipiodol was given. In October—that is, nine months or more from the start of her abscess—she was operated on in two stages. She greatly improved, but relapsed. A phrenic evulsion was performed. She relapsed again, and was very ill for many months. She then developed arthritis. She was wasted, febrile, and still bringing up sputum. Finally a course of N.A.B. was given, she made a complete recovery, and is now perfectly well.

Conclusion

In conclusion, I would say that if I had a lung abscess I would wait a month before being operated on, unless the symptoms were intolerable. My own personal predilection would be for open operation and drainage rather than for bronchoscopy, but I fully realize that there are many authorities who hold dissimilar views.

VOLUNTARY PATIENTS IN MENTAL HOSPITALS

NEED FOR TREATMENT UNITS

A number of recommendations for the treatment of voluntary patients under the Mental Treatment Act of 1930 have been drawn up by the National Council for Mental Hygiene. The committees through which the document has passed comprise superintendents of mental hospitals, past and present, assistant medical officers of mental hospitals, psychotherapists of various schools, mental hospital visitors, justices of the peace, and social workers. It is hoped, therefore, that the recommendations may be regarded as a serious contribution from both the professional and the lay points of view.

RECOMMENDATIONS BY NATIONAL COUNCIL

1. The mental hospital can afford treatment facilities for the voluntary patient, provided there is available a special treatment unit, detached from the main hospital buildings.

2. Successful treatment depends upon the construction and the adequate medical staffing of the treatment unit.

3. It is essential that this treatment unit should be so arranged that suitable grading of patients is ensured—in other words, that the disturbed patient should not be in proximity to the patient in need of rest and quiet.

4. Only patients who are accessible to active remedial treatment, psychological or physical, should be permitted to reside in the treatment unit.

5. The medical officer in charge of the treatment should be a senior man or woman fully qualified to carry out modern methods of treatment, both psychological and physical. In order that his energies may not be dissipated he should neither have to supervise the welfare of chronic patients nor be burdened with administrative duties. Moreover, he should be supported in his therapeutic activities by assistants, preferably part-time.

6. It would be inexpedient at present to provide accommodation for the voluntary patients other than at the treatment unit of the mental hospital.

7. The provision of well-constructed, well-staffed treatment units will help to break down the popular prejudice which still exists in relation to mental hospitals.

8. In any discussion of the voluntary patient it should always be kept in mind that included in this category are psychotic patients who, were it not for the Mental Treatment Act, would require to be certified.

9. It is recognized that although in a few mental hospitals these principles are applied, in general they are not adopted throughout the country, and it is considered advisable, therefore, to advocate that propaganda should be developed to achieve their acceptance and practice.

10. The treatment unit within the mental hospital should be regarded as a practical solution of the voluntary patient problem *for the time being*, but should not be considered as necessarily permanent and final.

11. It is suggested that every university town should endeavour to establish a teaching hospital under the control of a part-time director, who should be professor of psychiatry at the university.

MELBOURNE HOSPITAL MEMORIES

BY

CHARLES V. MACKAY, M.D., B.S.MELB.

MEDICAL SUPERINTENDENT, 1908–12

The Melbourne Hospital deservedly enjoys a very high reputation throughout Australia and New Zealand, but its fame is not confined to the great Commonwealth or to the Dominion. Medical graduates with Melbourne Hospital training have won honoured recognition in many parts of the Empire, notably so in the capital city of London. The estimation in which this hospital is held is, in my opinion, firmly based upon its surgical tradition and practice. In a young and rapidly growing community, such as the State of Victoria has been during the past fifty years, the results of surgical operative skill have gained more adherents than those achieved by the less spectacular methods of the physician.

Hence has arisen in Melbourne a predilection for surgical work and an unquestioned capacity on the part of the young Victorian surgeon to master the most daring procedures, the newest methods, and the most complicated technique of his art. The outstanding ability of its surgical staff has been the keystone of the foundation upon which the fame of this hospital has been built. It is, however, the pre-war generation of surgeons who worked in the old Melbourne Hospital buildings (before the great reconstruction, begun in 1911, gave to the city its present magnificent blocks of wards, operating theatres, etc., but at the same time unfortunately destroyed its beautiful lawns and fine old elm trees) whose memory I particularly desire to recall. During the twenty years previous to 1914 they raised this institution to a pre-eminent position, not only in the State of Victoria but, with the possible exception of the State of New South Wales, throughout the greater part of Australia. Such names as those of Sir Thomas Fitzgerald, Sir Charles Ryan, Fred. Bird, William Moore, Robert Stirling, and Sir George Syme were household words of example and admiration wherever Melbourne Hospital graduates were practising the art and science of surgery.

Surgical Accommodation Before the War

At this period, in conformity with the ideas of the pre-surgical era, the majority of the hospital's 320 beds were occupied by medical cases. Typhoid fever was very prevalent, and I have seen a whole ward practically filled with patients suffering from this disease. The cold bath treatment then in fashion was a difficult problem for the nursing staff. A persistent administrative difficulty, in spite of a yearly admission total of over 8,000 patients, was the constant shortage of surgical accommodation. The five indoor surgeons had only thirty beds each, and no beds were available for the outdoor staff. There was only one large modern operating theatre and a small, ill-equipped one for out-patient surgery. With the rapid expansion of the surgical field, the daily operation waiting list became a source of anxiety and sometimes led to unpleasantness. Urgent requests by the surgeons and anxious appeals from their waiting patients had both to be refused for lack of available beds.

Owing to its central position in the city (with a population then considerably over half a million people) the Melbourne Hospital received the great majority of all accident, emergency, and police cases. These further curtailed the already very limited accommodation. In spite of this handicap much excellent surgical work was performed, and the standard of abdominal surgery thirty years ago was a high one. Among many operations of great interest I can personally recall a successful partial gastrectomy, successful sutures of perforated typhoid and duodenal ulceration, and successful removals of the spleen for splenic anaemia. The results of treatment of acute appendicitis by immediate operation would challenge comparison with those of most hospitals of the present day. With the exception of the skin clinic there were no departments for the treatment of specialties at the hospital. Surgeons were expected to do general surgery, and its scope was extensive.

The unfortunate shortage of surgical beds, while chronic medical cases remained in hospital for prolonged periods, was responsible for considerable friction between the indoor and outdoor staffs. No vacancy on the indoor staff had occurred for many years, and men of great ability such as the late Mr. George Rennie and Mr. Langlands were forced to languish on the junior staff. Jealousy unhappily prevented any real co-operation, and the members of the out-patient staff were not called upon to act as assistant surgeons. Night emergency operations offered a little scope, but the roster for calling the surgical staff was a strict one, and had to be minutely adhered to by the house-surgeon on duty. Thrown back on their own resources the outdoor surgeons were compelled to do as much surgery as possible, under disadvantageous circumstances since the patients had to be sufficiently recovered to go home the same day, in the out-patient operating theatre. The distinction between minor and major surgery became somewhat elastic, and, in my opinion, the boundaries were often overstepped.

Chloroform was still extensively used as a general anaesthetic twenty-five to thirty years ago, and fatalities were not rare. Until 1909 no nurse had received any training in the management of an operating theatre and in the knowledge of large-scale sterilization, etc. This work had always been in the hands of the male surgical dressers, who were recruited from the ranks of the hospital orderly staff. At the head of these was Filmer, a man of great natural ability, who had been in charge of all the hospital instruments and operating theatre arrangements for many years. Generations of house-surgeons, medical students, and nurses owe a debt of gratitude to Filmer: he knew the foibles of every surgeon, and no emergency would find him unprepared.

The Work of Richard Stawell

At the time I refer to, the honorary staff of the hospital held a monopoly of the University clinical teaching in medicine and surgery. Students in attendance at the hospital paid special fees for this purpose, and although the standard of practice was high, the quality and the quantity of the teaching were very unequal and frequently caused much dissatisfaction. It was not until Dr. R. R. Stawell, now Sir Richard Stawell, and President-Elect of the British Medical Association, was appointed physician to out-patients in 1903 that teaching by the honorary staff of the hospital began to approach the quality of that given by London, Edinburgh, and provincial clinical hospital schools in Great Britain.

Before Dr. Stawell's appointment the medical student at the Melbourne Hospital was largely left to his own initiative to ferret out knowledge wherever and whenever possible. Although this lack of systematic teaching (sometimes derisively called spoon-feeding) may have developed self-reliance, and was probably to the advantage of the exceptional student, it left the humble rank and file deprived of adequate guidance, supervision, and stimulation. Familiarly known to his students as "Dicky," Dr. Stawell's devotion to the cause of improvement of medical teaching in Melbourne was supreme. It was one of his life's chief ambitions, and he spared neither time nor energy to further this object, which he rightly considered to be of such fundamental importance both for the hospital and for the community. Dr. Stawell was a born teacher of medicine, and it has been mainly due to his influence and example that clinical teaching in Melbourne has reached its present high level. To attend Dr. Stawell's clinics was the privilege of a lifetime. The scientific grounding received in the physical signs of the chest and in neurological diseases was one never to be forgotten. Although often smarting from some well-merited rebuke, the dull recipient ultimately came to regard this apparently austere clinician with feelings of real affection.

Coincident with Sir Richard Stawell's appearance on the out-patient staff, the Melbourne Hospital had the great

good fortune to elect direct to its indoor staff a physician of outstanding eminence in the person of Sir Henry Maudsley. With two such clinical teachers the student of medicine in those pre-war years had opportunities for acquiring knowledge in diagnosis and wisdom in treatment such as fall to the lot of few.

No memories of the Melbourne Hospital of thirty years ago would be complete without reference to the late Sir Harry Brookes Allen, the holder of the double University Chair of Anatomy and Pathology. To supplement and to round off his training in medicine the student was blessed with instruction by a brilliant pathologist. His post-mortem demonstrations in substance—for example, in syphilitic infections—often considerably in advance of his time, were models of what such demonstrations should be. He was ambidextrous ; his knowledge was encyclopaedic ; and he spared himself no labour to show in the pathological processes so ably displayed a striking lesson to the somewhat unwieldy crowd of students and graduates which always attended to hear him.

With such men as these to guide the students, it is little wonder that the Melbourne Hospital has given graduates to the world of which any medical school might be justly proud.

MEDICAL RESEARCH COUNCIL

REPORT FOR 1933–4

A leading article at page 424 mentions the principal aspects of the work carried out by the Medical Research Council[1] during the year which is reviewed in its report for 1933–4. In this article and a subsequent one the detailed researches described will be briefly set forth.

The equipment of the Institute has been improved by the removal of the last temporary buildings erected during the war, and a detriment to the amenities of the estate and the neighbourhood is now ended.

VIRUS DISEASES

The researches in infective pathology are still concerned largely with viruses and virus-like infective agents. There has been no epidemic of influenza, and so no opportunity for further experiment on its transmission from human beings to ferrets. In only one case was an inoculation of throat washing from a sporadic case of influenza successful. Apparently most of the sporadic cases described as influenza have a different cause, or the virus, if present in them, is of low infectivity. Further work has, however, been carried out on the virus already isolated during the epidemic of 1933. Many attempts at immunization have been made without success. The serum of a ferret which has recovered from infection contains antibodies which neutralize the infectivity of the virus *in vitro*, but these cannot be produced in the ferret by any means other than actual infection. Practically all the human subjects examined contained neutralizing antibodies in the blood, and it is proposed to test the population and see whether there is any change in the presence of an advancing epidemic. Attempts to cultivate the virus have not been successful, nor has it been possible to find any visible organism which will regularly produce a fatal pneumonia on the basis of a primary virus infection. Both human and swine influenza viruses have now been successfully transmitted to mice—an extremely important event, making it possible for every laboratory in the country to study influenza when it occurs.

The virus of vesicular stomatitis, unlike that of foot-and-mouth disease, will grow on the chorio-allantoic membrane of the chick, and so will the virus of louping-ill, but attempts to propagate the viruses of human disease by artificial cultures have met with no success. Dr. Levinthal has continued his investigations on the organism of psittacosis, and has been able to cultivate it and carry it through fifteen subcultures. It has the characteristics of a definite micro-organism, only differing from bacteria in its minute size and in its dependence for propagation on the presence of living cells from a susceptible animal. Virus diseases of the central nervous system are also being studied, and the agent from a serious epidemic of poliomyelitis in St. Louis, U.S.A., has been successfully maintained in mice. Louping-ill has been transmitted to the monkey.

Dr. Andrewes and Dr. Elford have completed a research on the law governing the neutralization of the lytic activity of a bacteriophage by its specific antiserum. Apparently a given strength of the antibody neutralizes a constant proportion of the bacteriophage irrespective of the absolute amount added. This correlates with some work by Mr. Bruce White on cholera vibrio ; he has shown that the rough variant has lost a specific haptene. These rough variants escape lysis by a specific bacteriophage, and may be recovered in culture.

Dr. Gye, Dr. Purdy, and Dr. Andrewes have continued their investigations into the infective tumours. The fibroma-like tumour discovered in a cottontail rabbit by Shope seems to be inflammatory rather than neoplastic. A papilloma also discovered by him in the same animal is under investigation. The infective units from Rous No. 1 fowl tumour seemed to be about 0.1 micron in diameter. The photodynamic inactivation of viruses has been further studied, although it has not been possible yet to produce an effective single-dose vaccine for dog distemper. Susceptibility to this treatment seems to have no relation to the state of organization of the different viruses. Enzymes, such as rennin and trypsin, and immune principles in true solution are highly susceptible, while lysozyme from tears is highly resistant. The "fixed" virus of rabies is readily susceptible, and when thus inactivated is a highly efficient immunizing antigen. Experiments with the "street" virus, obtained directly from the rabid dog, are in progress.

BACTERIA AND PROTOZOA

Dr. U. Friedemann, formerly of Berlin, has published a series of experiments on the conditions determining the accessibility of the brain and central nervous system generally to bacterial toxins and similar poisons (the blood-brain barrier).

The work of Dr. Gough and Dr. Burnet, on the constituent which provides the specific affinity of the bacteriophage for the organism, has shown that this is free from protein but generally contains phosphorus and nitrogen. Dr. Gough has separated the specific constituents of "old" tuberculin into two fractions, the first of which accounts for 90 per cent. of the activity, while the other is a proteose, small enough to pass through a membrane with 0.004 micron pores. A substance has been prepared from the urine of tuberculous patients which appears to be specific, but it is not yet certain whether its presence will serve to distinguish patients with active tuberculosis from those with latent or healed infections. Mr. Dobell has completed the sixth instalment of his investigation into the intestinal protozoa of monkeys and man. The trichomonads of macaques and human beings do not seem to differ from one another, and a number of unnecessary synonyms exist in the classifications. None of the strains seem to be pathogenic in themselves. The life-history of the non-pathogenic *Entamoeba coli* is being studied.

PHYSIOLOGICAL CHEMISTRY

The classification of nerve fibres into cholinergic and adrenergic, according to whether they transmit their effects by means of acetylcholine or a substance related to adrenaline, is already well known. The synapses in the ganglion have now been definitely identified as the site of release of acetylcholine, and the ganglion cells can be rendered insensitive to preganglionic impulses or

[1] London: H.M. Stationery Office. Cmd. 4796. (3s. net.)

to the artificial application of acetylcholine without interfering with the process by which the impulses release acetylcholine at the synapses. The many analogies between the preganglionic fibres of the autonomic system and the ordinary motor fibres of the voluntary nervous system have led Sir Henry Dale and Dr. Feldberg to extend their work to voluntary muscle, and evidence of the liberation of acetylcholine has already been obtained. The preganglionic fibres of the whole autonomic system, the post-ganglionic of the parasympathetic, and the motor fibres to striped muscle can now be classed together as cholinergic, while post-ganglionic fibres of the sympathetic system are predominantly, but not exclusively, adrenergic. In the first decade of this century Langley and Anderson showed that voluntary motor fibres and preganglionic fibres of the autonomic system could be used to replace one another in regeneration experiments, but that no functional replacement could be obtained between preganglionic or motor fibres and post-ganglionic sympathetic fibres.

Dr. H. W. Dudley and Dr. J. Chassar Moir have continued their search for the water-soluble active principle of ergot, and all doubt as to its existence has been removed. There is a good prospect of its isolation in the near future. Dr. King has also continued his work on the different types of curare.

Dr. Corkill and Dr. Ochoa have been studying the interference with the activity of insulin which is produced by toxaemia. The livers of young rabbits rendered toxaemic by diphtheria do not acquire a store of glycogen in response to a dose of insulin or adrenaline, but they do store it from a dose of glucose. Lactate, however, is readily stored as glycogen in the normal liver, but not at all in a diphtheria-toxaemic liver. The cycle of carbohydrate metabolism seems to be broken by the toxaemia. The relation of pituitary to carbohydrate metabolism has been further studied. Loss of the pituitary body causes a further large increase in the sensitiveness to insulin of a rabbit deprived of the thyroid gland, but injections of the anterior pituitary extract produce the typical resistance to insulin in the absence of the thyroid gland. The insulin fall in the normal animal is early interrupted by the compensatory output of sugar from the liver, and this compensation is lacking in the depituitarized animal. Apparently a pituitary hormone is necessary to render the liver glycogen accessible to the mobilizing action of adrenaline. The same statement is true of the muscle glycogen. The mechanism of glycogen deposition in the liver of young rabbits has been taken a stage further, as it has now been shown that in the absence of the suprarenal medulla insulin will not cause the deposition of liver glycogen.

Further work has been done on the nature of the intramolecular changes which convert ergosterol into calciferol (vitamin D) during irradiation. The new general formula for the sterols suggested by Dr. Rosenheim and Dr. King has in a remarkably short time made clear the constitution not only of cholesterol and bile acids, but also of the oestrogenic hormone and related substances. The phenanthrene nucleus of the formula is common to the structure of a series of compounds having high degrees of activity of such different types as those of vitamin D, the oestrogenic hormone, the male hormone, and the carcinogenic substances used as skin applications. The corpus luteum hormone seems also to belong to this group. Mr. Webster has continued his experiments on the fate of vitamin D in the body, and finds that the foetus receives negligible amounts through the placenta compared with that obtained through the milk at a later stage, and that the curious freedom of the brain from this vitamin cannot be attributed to a destructive action.

Miss Strangeways has demonstrated the curative action of two arsenical compounds on experimental trypanosomiasis in rabbits and mice, and they are to be tried in human cases.

Experiments are continuing on the exposure of mice to dust from tar-treated roads, and on the acclimatization of mammals to reduced tensions of oxygen. Dr. R. T. Hill has compared the gonadotropic activities of anterior pituitary lobes from a number of different species of animal, the most active being the male cat and the least active the guinea-pig. Mr. Rowlands found quite a different order of activity for the thyrotropic hormone, the ox being the most potent and the horse the least. The effects of extirpation of the pituitary have been studied, and a satisfactory procedure for the operation in birds has been devised.

BIOLOGICAL STANDARDS AND WORK ON THE CIRCULATION

There are now twenty-three standard preparations prepared at the Institute, and thirty-three countries were supplied with samples of them during the year. A standard agglutinating serum for *Bacillus abortus* has been prepared in a dry, stable form, in addition to the sera of gas-gangrene antitoxin, staphylococcus antitoxin, and two anti-pneumococcus sera. These have been tried out on an international basis. A standard and unit have been adopted for gas-gangrene antitoxin, and this will be supplied to the National Institute for British use. Biological methods are available for determining with ease and accuracy the unit value of an unknown preparation in a comparative test. Work is continuing on standardization of anti-meningococcus serum, and on the actively immunizing properties of formol-toxoid staphylococcus.

Vitamin standards have been reviewed in the light of the Second National Conference last June, and the preparation of the new international insulin standard is now approaching completion. The National Collection of Type Cultures of micro-organisms is still accommodated at the Lister Institute, and a number of types have been added. The work of producing and standardizing bacterial suspensions and agglutinating sera for the diagnosis of bacterial infections has been maintained at Oxford.

In the Department of Clinical Research at University College, Sir Thomas Lewis has completed his studies of patients suffering from erythromelalgia, which is not a specific disease, but a peculiar state of painful redness of the skin due to the local release of a substance which lowers the initial threshold of sensitivity of the cutaneous pain nerves. Thus pain is caused when this skin is warmed or stretched. Dr. Pickering has gathered together information as to the diagnosis of structural disease of arteries of the limbs, showing that much valuable information may be obtained by simple clinical tests. The most reliable is the reactive hyperaemia test. He has also completed a series of observations on cerebro-spinal fluid pressure in cases of hypertension.

(*To be concluded*)

A note of topical interest appears in the administration report of the Director of Medical and Sanitary Services in Ceylon for 1933 ; it is stated that, owing to the need for continued retrenchment, all major schemes of anti-malaria drainage at the campaign centres were held over, and minor works of a permanent or semi-permanent nature were carried out as far as possible by the maintenance gangs. In that year there was a notable fall in the amount of malaria in the Western, Central, Eastern, North-Western, North Central, Uva, and Sabaragamuwa Provinces, but an increase in the Northern and Southern Provinces. Yet, even so, malaria is described as being then the most prevalent disease in the island ; 23,000 cases were admitted as in-patients to hospitals, and considerably over a million patients were treated at dispensaries and out-patient departments. Several pages of the report are devoted to details of the antimalaria work in progress, including educational propaganda and the provision of prophylactic doses of quinine, but the value of the latter was doubted in some areas. Many cases of malaria in remote villages were treated by itinerant medical officers. The great colonization scheme on jungle land in Minneriya, a very malarious region, was instituted in 1933 before any permanent malaria control measures could be adopted.

Nova et Vetera

ACROSS CANADA VIA THE ROCKY MOUNTAINS IN 1863

The British Medical Association party which traverses Canada this summer from the Atlantic to the Pacific will follow tolerably closely the route pioneered over seventy years ago by two Englishmen, one of whom was a member of the medical profession. In 1861 the then Viscount Milton, heir of the Earl Fitzwilliam of those days, and father of the present holder of this title, visited Canada in company with Dr. R. E. Thompson in order to get buffalo hunting; and he conceived a plan of returning the next year with intent to cross the continent from east to west. Accordingly in June, 1862, he left home, accompanied this time by Dr. W. B. Cheadle—later physician to St. Mary's Hospital and a successful London consultant—with this end in view. On their return in 1864 the travellers published an account of their travels under the title of *The North-West Passage by Land*, which ran through many editions and attracted much attention. The book is written with an engaging humour and a simple modesty of style, the art of which is not allowed to reveal itself, and is correspondingly effective. How much of the book was due to each of the pair of authors is not explained: it reads like the composition of one individual, and if that is indeed the case the author was possibly Dr. Cheadle, for medical similes and allusions are not rare. Be that as it may, the book has an abiding interest, because it contains a strong plea for the colonization of the Canadian North-West, and for the construction of a trans-Canadian railway as an instrument for such a development: as a direct consequence a commission was appointed, which reported favourably upon the idea, and the C.P.R. has been the result.

Milton and Cheadle travelled by sea to Toronto: they then diverged into U.S.A. territory, by Detroit and Chicago to La Crosse by train, and thence by steamer to St. Paul. From there they took coach to Georgetown on the Red River, and stopped at Sauk Centre on the way; a fortnight after they left this settlement the Sioux Indians rose in rebellion and massacred every soul in the place. From Georgetown they canoed five hundred miles to Fort Garry through uninhabited prairies. These were the days when it was not uncommon for a thousand "buffalo" (bison, properly speaking) to be slaughtered in a single hunt. After themselves taking part in successful buffalo hunts, they travelled westwards again along the Saskatchewan River and decided to go into winter quarters near White Fish Lake, fifty miles N.N.W. of Carlton, and right amongst the buffalo herds and many other kinds of game. They built a log hut, and with a few half-breed servants endured considerable hardships whilst they were snowed up that winter: they remark that "the days when it was possible to live in plenty by the gun and net alone have already gone by on the North Saskatchewan." One more quotation to show their foresight—"From the Red River to the Rocky Mountains, along the banks of the Assiniboine and the fertile belt of the Saskatchewan, at least sixty million acres of the richest soil lie ready for the farmer when he shall be allowed to enter in and possess it. This glorious country, capable of sustaining an enormous population, lies utterly useless, except for the support of a few Indians, and the enrichment of the shareholders of the Last Great Monopoly" (the Hudson Bay Company is meant). They do add that the company is at last adopting a more liberal policy, and that much of the backward state of the Red River Colony is due to the incorrigible idleness and thriftlessness of the French Canadians and French half-breeds who formed the bulk of the inhabitants.

In the early summer of 1863 the party pushed further west to Edmonton, where the H.B.C. had a post which was in communication by water transport with Hudson Bay itself. After sifting all the available local information about the passes through the Rockies, they decided to try the Tête Jaune ("Leather") Pass. Thirty families, they tell us, constituted the Edmonton community, from which they recruited some new servants; the only faithful ones of these were an Indian and his squaw, of whom they always speak with affection as Mr. and Mrs. Assiniboine—the rest deserted at an early opportunity. At this time the only pass through the Rockies regularly used was the Peace River Pass, much further north, which was traversed once a year each way by a "brigade" of the H.B.C. After a difficult journey they reached a hut called Jasper House, on the Athabasca River, a fur-trading post which was occupied only for a short time each summer; a party of the H.B.C. fur traders arrived soon after our travellers did, but were themselves so short of food that they could do little to fill up the depleted stores of the expedition. On July 4th they left Jasper House with a pack-horse train for the crossing of the Rocky Mountains, ascending a tributary of the Athabasca where the rocky ground made progress both slow and toilsome. After a few days the going improved, and towards the top of the Tête Jaune Pass the gradient became so easy that the travellers crossed the divide without realizing it, and came across a stream flowing westward to the Pacific when they thought themselves still on the eastern slope of the chain.

The original intention had been to visit the not long discovered goldfields of Cariboo, which lay to the north-west of the Pass; but the trackless forests and the deep canyons among a tangled mass of lofty mountains effectually prevented this, and a course was steered for Kamloops, a mere 200 miles or so away to the south-west. The forests were so virgin, pathless, and almost devoid of game, that very great difficulties were experienced in getting the pack train through them; and it is quite clear that the whole party only just came off with their lives, and then only through the physical endurance and heroism of Cheadle and the Assiniboine Indian, who managed to keep going when all the rest were completely beaten by privation and hunger. Cheadle was a man of enormous physique, in the prime of his early manhood: when he at last reached a land of plenty at Kamloops he gained 41 lb. in weight in a fortnight, an eloquent testimony to the narrowness of his escape from death by starvation during the previous five weeks. The travellers did afterwards visit Cariboo, and made a leisurely return to England via Victoria, San Francisco, and Panama, arriving in the spring of 1864. Viscount Milton afterwards became an M.P., but died before succeeding to his father's earldom: Cheadle lived to a ripe old age, and died in London in 1910, much respected by many generations of St. Mary's men. In a real sense of the phrase, they were the begetters of the Canadian Pacific Railway, and deserve to be held in affectionate memory by all who travel from sea to sea on that system. Whether Alberta, Manitoba, Saskatchewan, and the other Canadian provinces realize how much they owe to this gallant pair the members of the British Medical Association's tour will be able to gather for themselves during the coming summer: either at Edmonton or Jasper House or at the divide of the Rocky Mountains there ought to be a memorial to them, if there is none already.

HENRY ROBINSON.

A. Bobbio and E. Zilocchi, writing in *Arch. Ital. di Chir.* (December, 1934), report the effects of ether or percaine anaesthesia and operation on the composition of the bile in four patients, aged from 29 to 47, with a biliary fistula. The cholesterin and chloride content showed an immediate fall after the operation, the lowest level being reached in seven or ten hours respectively, and the normal level being regained in twenty-four hours. The bile pigments, on the other hand, showed a sudden increase in concentration, which became most marked on the first day after the operation, and lasted from ten to twelve days until the normal condition was re-established. The authors attach special importance to extrahepatic factors such as haemolysis and absorption of extravasations of blood, which cause an increase in the production of bilirubin. Lastly, the changes in the quantity of mucin in the bile were not considerable, because the mucous membrane of the biliary tract is less sensitive than the hepatic parenchyma to changes in the blood produced by the anaesthetic and the operation.

Scotland

Royal Medical Society

At the annual dinner of the Royal Medical Society, held in Edinburgh on February 21st, with Dr. J. L. Henderson, senior president of the society, presiding, Emeritus Professor Edwin Bramwell, who was the chief guest, said that the society was the oldest medical society in existence: in two years it would celebrate the 200th anniversary of its foundation. The society had undoubtedly played a great part in moulding the personality and future of some men who had studied at Edinburgh and had become masters of medicine all over the world. In suggesting that all medical students should join the society, he said that the knowledge of a mass of facts in medicine was not sufficient, for some men never learned to think, but appeared to walk through life between two walls with limitations built up by the examination system and the dogmas of teachers. In this society, however, they learned to emancipate the mind from the fetters of authority, and to cultivate the faculty of independent thought, of criticism, and of scientific curiosity.

Cancer Control

The first annual general meeting of the Cancer Control Organization for Edinburgh and the East of Scotland was held in the City Chambers, Edinburgh, on February 22nd, under the chairmanship of the Marquess of Linlithgow. The chairman said it was most important that people should go to their doctor at an early stage when any symptom that might possibly indicate the development of cancer presented itself. Not improbably the doctor would be able to assure the patient that the condition was not malignant, and the patient would be able to go home with a mind freed from anxiety. Time was vital, and if a condition was malignant a short period might make all the difference between success and failure of treatment. He believed that in giving a lead to the public in this matter the Cancer Control Organization was destined to play a great part. Mr. J. J. M. Shaw, chairman of the Executive Committee, in submitting the report for 1934, said they regarded the first year of the organization's activity as being entirely satisfactory. Difficulties had been few, and finance was adequate. This organization was not in any way overlapping others which were carrying out extensive work with regard to cancer, and it had joined the International Union of Cancer. Its main object in regard to research was to stimulate work and to finance it to a certain extent. A statistical volume had been produced, giving a careful analysis of the treatment of cancer. With reference to early diagnosis and treatment, lectures had been given to doctors, nurses, and dentists by distinguished members of the Edinburgh Royal Infirmary staff, and co-operation with the hospitals in the area had been secured. A scheme had been initiated whereby every medical practitioner in country areas of South-Eastern Scotland received a book of vouchers which made it possible for his patients, in cases that he deemed desirable, to travel to the centres for examination or treatment. This would help local doctors to send patients at the earliest possible date. The organization had also assisted the National Radium Centre at the Edinburgh Royal Infirmary by offering £15,000 towards the provision of the most efficient type of deep *x*-ray treatment. Professor William Annan, the honorary treasurer, in submitting the accounts, said that the income for the past year had been £7,302, while items of expenditure had included £794 for research and £1,036 for care and treatment; there was still a sum in hand of £5,211.

Glasgow Victoria Infirmary

At the annual meeting of the Victoria Infirmary, held in Glasgow on February 22nd, Lord Provost Sir Alexander B. Swan, who presided, said that the governors of the institution were the originators in Scotland of wards for paying patients. He did not think that anything which had been done by the infirmaries in recent years had been a greater step forward in hospital organization than the inauguration of these wards. Mr. John Robertson, who presented the financial report, said it was gratifying that both general and employees' subscriptions showed an increase over those of last year, and it was hoped that a still larger measure of support would be derived from these sources in future years. At the present time the governors were making an extension of the paying patients' block, at a cost of £78,000. The report showed that the number of patients treated during the past year was 9,532, from all parts of the country; of these no fewer than 279 were admitted as the result of motor accidents. Donations and legacies received during the year for endowment purposes amounted to £24,498, and legacies for general purposes to £21,536. The annual expenditure of the institution now exceeded £72,000, and the governors were making an earnest appeal for a large accession of annual subscriptions and legacies to enable them to carry on the work. There had been a very definite demand for admission to the paying patients' wing, for which there was constantly a waiting list; the number of patients admitted to this wing during the year having been 641.

Development of Chiropody

At the annual dinner of the Scottish Branch of the Incorporated Society of Chiropodists, held in Edinburgh on February 16th, Dr. R. W. Craig, Scottish Medical Secretary of the British Medical Association, proposing the toast of "The Society," said that he felt a little as Daniel must have felt when he found himself in the lions' den. He was referring to the fact that the British Medical Association had last year turned down the request for recognition made by the Incorporated Society of Chiropodists. The society had a very good history. It had been founded in 1912 to foster and regulate training in chiropody and to test students by examination. It had always recognized its indebtedness to the medical profession, and the medical profession had increasingly recognized the good work done by its members. There was a danger at the present time that commercialism in its objectionable forms might creep into the practice of chiropody, and that would be unfortunate for the future of this branch as well as dangerous to the public well-being. This was a strong argument in support of the recognition of the society. In Edinburgh the School of Chiropody had an excellent staff of lecturers and teachers, on which were several of the most eminent members of the medical profession in the city, and there was a great field and a great future for its activities. Mr. T. M. Millar, assistant surgeon to the Royal Infirmary, proposing the toast of "The Scottish Branch," said that if many of those people who criticized chiropodists and thought they should not be recognized would come to the Edinburgh Foot Clinic they would be very glad indeed that there were chiropodists. The students at this school had a high educational standard, and were trained on scientific lines, so that cases were constantly referred to the clinic from the Royal Infirmary and from doctors. On the other hand, cases were also referred back from the clinic to doctors or to the Infirmary after examination as requiring more than chiropodic treatment. The Scottish Branch had been formed in 1918, with an original membership of about two dozen people; to-day, in Edinburgh alone there were some sixty members of the society, with many more

in other centres. When the Edinburgh Foot Clinic was first founded in 1924, 3,000 patients were treated in the year. Now it was possible to treat between thirty and forty patients at one time, and the total for last year had been 15,000 cases. He had little doubt that eventually members of the society would be attached to the staffs of all the general hospitals for the treatment of patients.

Presentation to Ambulance Lecturer

Dr. James H. Murray, who is the senior practitioner in Stirling, was made the recipient, on February 22nd, of a wallet of Treasury notes, on the occasion of his retirement from the post of lecturer to the Stirling Railway Ambulance Brigade, after a period of service lasting thirty-six years. Dr. Murray graduated at Edinburgh University in 1892, and, after holding a post as house-surgeon of Stirling Royal Infirmary, settled in that town. In 1899 he became lecturer to the Caledonian Railway Ambulance Section, and his enthusiasm for teaching ambulance work attracted pupils in large numbers, so that over 1,000 persons in Stirling and the surrounding districts gained certificates for first aid.

India

Memorial to Sir Ronald Ross

A tablet in memory of Sir Ronald Ross has been erected in the cottage at Secunderabad where, working on Manson's hypothesis, he traced out the life-history of the malaria parasite in the mosquito, thus laying bare the precise relation between human malaria and mosquitos. It was there on a hot August afternoon in 1897 that Ross found the Laveran plasmodium in the stomach tissues of female anopheles which had fed upon the blood of malarial patients. The memorial was unveiled recently by Colonel E. C. Hodgson, D.S.O., I.M.S., Assistant Director of Medical Services for the Deccan district. The inscription on the tablet runs as follows: "To the memory of Sir Ronald Ross, and the discovery he made here on August 25th, 1897, that the anopheles mosquito is the carrier of the malaria parasite."

Health Propaganda in Bengal

The Bengal Public Health Report for 1932, prepared by Dr. R. B. Khambata, contains interesting references to the educational work which is in progress. The demand for publicity officers and materials in both rural and urban areas is growing. The continued trade depression has impoverished the Bengal peasantry acutely, but the actual number of health exhibitions held in the province during 1932 did not reflect any corresponding depression in the new awakening of the sanitary conscience. The popular demand for publicity work led the Government to sanction an increase of staff from five to twelve units, each of which was composed of a lecturer, an operator, and an assistant with a portable cinema outfit. These units have been touring in the interior of the districts, visiting villages in turn, two consecutive exhibitions being given in each place. The staffs undertook twenty to twenty-four days' touring in each month, and yet the demand was unabated. Nearly 1,300 exhibitions were given, and an equal number of lectures were delivered during the year, as compared with 500 in 1931 and 400 in 1930. The services of this section were requisitioned also by the organizers of seventy-one industrial and agricultural exhibitions, of which only forty could be attended. Another film has been added to the programme. It deals with village reconstruction. A copious supply of posters, charts, and leaflets has been distributed throughout the province. The school hygiene branch arranged for practical demonstrations of school medical inspection work in all schools where new medical officers were appointed. Lantern lectures and cinema demonstrations were given in jute mills and similar industrial organizations. The Asansol Mines Board of Health has a staff of midwives which pays ante-natal visits to expectant mothers, renders free maternity services, and supervises the work of the native midwives in the settlement. Health talks and informal lectures were also arranged by them for married women in the mining area.

Madras Hospitals and Dispensaries

Satisfactory continuation of the campaign against leprosy is reported by Major-General Sir F. P. Connor, I.M.S., surgeon-general with the Government of Madras. Leprosy was formerly considered to be incurable, and the majority of those afflicted resigned themselves hopelessly to their fate. Many were unwilling to disclose the fact that they were infected and to seek scientific treatment, fearing permanent separation from their homes. Now that it has been proved that this disease is curable in its early stages and can be arrested in later ones, the maximum facilities are being afforded to Government servants believed to be leprotic to obtain leave for adequate treatment. The disease levies such a heavy toll in misery and disability on the country that every effort must be made to check its spread. Public co-operation is being secured in increasing measure. The existing group leprosy officers' scheme has been extended for another two years. Leprosy clinics have multiplied and social workers have volunteered their services. A conference was held in the surgeon-general's offices in 1933; medical and social workers took an active share in the proceedings, with the result that emphasis was laid on the part that could be played by jointly operating social and public health activities, and plans for arresting the disease in its early stages were formulated. The Government has sanctioned the extension of anti-leprosy work started by Mrs. Todd to South Arcot and Chingleput districts, and leprosy councils have been formed in several areas. Arrangements are in progress to secure the formation of similar councils in other districts also. The number of leprosy clinics at the beginning of 1933 was 196, and at the end of the year it had risen to 330. The total attendance of patients for that year was 695,295, and the new cases treated numbered 44,622. The clinics and the new cases have nearly doubled, a fact which affords conclusive evidence of the awakening in the public mind of the necessity for arresting the advance of this scourge. There has also been considerable anti-tuberculosis progress, and various investigations have been made. In Madras City the incidence is high, and the daily average number of patients treated in the local hospital has shown a steady increase in recent years, with the exception of 1929 and 1930. Most of the cases were found to be of the advanced type, but, owing to the more frequent employment of phrenic exeresis in them, better results are being obtained. Yaws continues to be prevalent in certain areas of the Presidency, and among particular tribes. For the Chenchus in the Kurnool district there is a travelling dispensary which moves from place to place, giving these patients occasional injections of neosalvarsan. General Connor reports that, although the reaction to the drug is rapid and treatment by it is eagerly sought, the arrangement of a travelling dispensary cannot be considered entirely satisfactory. The Government sanctioned the formation of a committee for formulating proposals for the further employment of honorary medical officers in Government medical in-

stitutions, and for suggesting modifications in the regulations relating thereto. This committee has reported, and its recommendations are under consideration; forty-five practitioners have been appointed as honorary medical officers under the revised rules.

England and Wales

Society of Apothecaries of London

A livery dinner was held in the hall of the Society of Apothecaries at Blackfriars on February 19th. After the loyal toasts had been honoured the Deputy Master, Dr. J. O. Wakelin Barratt, read from the chair a message of welcome and good wishes to all those present from the Master, Sir George Buchanan. Sir William Willcox, Senior Warden, proposing "The Guests," began with a few words about the hosts and their historical associations with medicine and the City of London. The Society of Apothecaries, he said, from the time of its constitution by Royal Charter in 1617, had grown steadily in usefulness to the public. The aim of its professional examinations was to turn out first-class all-round general practitioners of medicine; and beyond that it issued now a higher diploma in midwifery, with the object of promoting knowledge that would tend to reduce maternal mortality. Like all the City Companies, the Apothecaries delighted in hospitality, and in welcoming their many distinguished visitors that evening he coupled with the toast the names of Sir Francis Fremantle, M.P., and Sir Arthur W. Hill, director of the Royal Botanic Gardens at Kew. In his reply Sir Francis Fremantle complimented the Society upon the way in which, while standing for the old traditions of the great City Companies, it realized the practical needs and changing circumstances of modern life. By the institution of its obstetrical diploma the Society showed that it was alive to the important problem of maternal mortality. Referring to the Bill which had now reached the select committee stage in the House of Lords, Sir Francis expressed the view that public opinion would judge the osteopaths by their fruits, and the doctors as well. The theory of osteopathy might be nonsense, but from its practice there might perhaps emerge something worthy of incorporation in the art of medicine. The present situation needed careful and wise handling. In a sparkling speech Sir Arthur Hill touched in turn on the introduction of the banana into England three hundred years ago by Thomas Johnson, Master of the Apothecaries' Society, and on the intimate relation that existed for many years between the Society and the Chelsea Physic Garden. This led him to the State barges used by the Apothecaries and other City Companies on ceremonial occasions in former times. Mentioning that the site of the moorings of the old Apothecaries' barge could still be discerned in the Physic Garden, he suggested that in this silver jubilee year of King George's reign the City Companies might have a pageant with their barges on the River Thames. Among the other guests at the high table were Sir Henry Dale, director of the National Institute of Medical Research, Sir Edwin Deller, Principal of the University of London, the head master of Epsom College, and the President of the Pharmaceutical Society.

Joint Tuberculosis Council

At the February meeting of the Joint Tuberculosis Council Dr. G. Lissant Cox was elected chairman for 1935, Drs. L. S. T. Burrell and S. Vere Pearson vice-chairmen, Dr. Ernest Ward honorary secretary, Dr. G. Jessel honorary treasurer, and Dr. D. P. Sutherland honorary auditor. A memorandum on the examination of contacts was further discussed. Dr. Trail, convener of the committee, dealing with the results of artificial pneumothorax treatment, promised a preliminary report for the May meeting, and Dr. J. B. McDougall hoped to have a report from the Employment Committee to present to the November meeting. Dr. Brand announced that in continuance of his post-graduate work further courses had been arranged by Dr. Peter Edwards at the Market Drayton Sanatorium, a course at Victoria Park Hospital, and a most attractive course in Denmark during June. The secretary raised the question of short intensive post-graduate courses in tuberculosis for nurses, and several members averred that there was a general demand for these. It was decided that three representatives of the council should meet the Examination Committee of the Tuberculosis Association to discuss the matter, and that Dr. Ward should also get in touch with the College of Nursing and the General Nursing Council. Improved methods of sputum examination also received the attention of the council, and Dr. W. H. Tytler was asked to prepare a note on sputum examination for discussion at the next meeting. The utilization of tuberculosis institutions as chest hospitals and the standardization of the technique of blood sedimentation tests were likewise discussed.

Queen Charlotte's Maternity Hospital

The Clinical Report of Queen Charlotte's Hospital for 1933 includes statistical records and comments on their significance. A total of 3,847 patients were treated, of whom 1,417 were delivered in their own homes and 2,430 were inmates of the wards in Marylebone Road and the Invermead Overflow Home. In the case of the out-patients there was a maternal mortality rate of 2.1 per thousand and a foetal and neo-natal mortality of 3 per cent. Throughout the report the in-patient cases are divided into the two categories of booked cases and emergencies. Of the 2,430, 2,267 had been previously "booked" in the ante-natal department: 1,330 were primigravidae and 937 multigravidae. Of the patients sent in as emergencies by doctors or midwives, 104 were primigravidae and fifty-nine multigravidae. Nine of these patients died after delivery; 154 were delivered in hospital and subsequently discharged well. One of the eleven eclampsia patients died, the mortality rate being 9.1 per cent., while five infants died or were stillborn, a mortality of 41.7 per cent. Accidental ante-partum haemorrhage occurred in twenty-five cases; no mother died, but eleven infants died or were stillborn, a mortality of 44 per cent. In the thirty-three placenta praevia cases the placenta was central in three and one mother died; it was marginal in nineteen, with one maternal death; it was lateral in eleven, with two maternal deaths. Abnormal presentations included nine face, two brow, 117 persistent occipito-posterior, three shoulder, twenty-one prolapse of cord, and eighty-five breech. Ante-natal version was attempted in 117 instances; in eighty-six it was successful, an anaesthetic being used in thirty-six; in thirty-one it failed. Treatment of the failed versions resulted as follows: there were six cases of spontaneous rotation before term, seventeen breech deliveries, and eight Caesarean sections. The number of stillbirths was eight. Post-partum haemorrhage occurred in thirty-five cases, with four maternal deaths. There were 186 cases of normal delivery after labour had been induced, with one maternal death; twenty-four infants died or were stillborn, a mortality rate of 12.8 per cent. Forceps delivery was undertaken successfully in fifty-one cases of induced labour, with two maternal deaths and twenty infants dying or stillborn. It was used in 244 cases in which labour was not induced, with three maternal deaths and forty-five infants dying or stillborn. Caesarean section was employed in seventy-

two cases, with a maternal death rate of 2.8 per cent. and an infantile one of 6.9 per cent. In the 2,267 booked cases there were 110 cases of pyrexia and seven deaths without a rise of temperature. The morbidity rate for booked cases was 5.1 per cent. In the 163 emergency cases there were twenty-six cases of pyrexia and seven deaths without a rise of temperature. The morbidity rate for emergency cases was 15.9 per cent., comparing with 6 per cent. for the whole hospital. Details are given of the clinical conditions in the twenty-one fatal cases, of which thirteen occurred in the booked cases—a death rate of 5.73 per 1,000, and eight in the emergency group—a rate of 49.1 per 1,000. Since very little is known about the risks run by an infant when brought into contact with, or fed by, a mother suffering from some form of puerperal infection, this matter is being investigated in the hospital. Steps have been taken to ensure that, when it becomes obvious that breast feeding is impossible for any individual baby, discharge to the care of a relative or temporary foster mother shall be effected, so as to prevent prolonged unnecessary hospitalization of a healthy infant.

London School Medical Service

The London Education Committee, in introducing its programme of educational work for 1935–8, states that it includes additional arrangements for medical and dental treatment of school children, the supervision of rheumatism, and remedial work for stammerers. It is proposed to arrange, by stages, for annual dental inspections of all children. Special arrangements are proposed for dealing on preventive lines with those conditions of the nose and throat which, owing to the lack of early treatment, often result ultimately in enlargement of tonsils and growth of adenoid tissue. While the great majority of children suffering from orthopaedic defects are already provided for by the following-up arrangements made with voluntary hospitals and associations, systematic steps are to be taken to bring all such children under supervision and treatment, including remedial exercises. Proposals are included for a systematic weighing and measuring of children and for following up all cases of malnutrition. The medical oversight of young persons of 14 to 16 years of age has been approved in principle, and experimental arrangements are in force at all the voluntary day continuation schools and at certain of the junior evening institutes. This service is to be extended, and is to include the classes for unemployed boys and girls provided under the Unemployment Act, 1934.

Ireland

The Hospital Problem

At the annual Charter Day dinner of the Royal College of Surgeons, Mr. Seaton Pringle, President, in referring to the reorganization of the hospital system in Ireland and to the work being done by the Hospitals Trust, said that as a result of the funds from sweepstakes old hospital buildings had been replaced by new, and necessary extensions were being carried out and equipment brought up to date. Many plans were still under consideration by the Hospitals Commission, including the amalgamation of three or more of the general institutions, the provision of a new fever hospital, and the endowment of medical research. Mr. Pringle criticized the district and county hospitals system. He said that in the largest county in Ireland—Cork—there were in use or in process of erection no fewer than seventeen hospitals, including both county and district institutions, apart from the city institutions, and five of these were within a radius of thirty miles of Cork City. Considering the provision of hospital accommodation in relation to the population of the various counties, most extraordinary anomalies were to be found. For instance, there was in Cork a hospital to serve 17,000 of the population, whereas in Meath there were only two hospitals for a total population of 60,000, and in Sligo one hospital for over 70,000. In another county there had been for some years two district hospitals of fifteen or twenty beds respectively. Inquiry showed that the average number of beds occupied in each was roughly 50 per cent. Now, according to the local press, these were being replaced by two new hospitals, each of thirty beds, so that three or four times too much hospital accommodation was being provided in that county. Could nothing be done, Mr. Pringle asked, to bring some order out of this chaos before more money was wasted in providing hospital accommodation which would never be utilized, and which would prove a heavy annual charge on the rates? Another criticism was directed against some of the local boards of health. No fewer than sixteen of the county hospitals, he said, had no house-surgeons, and in nine the county surgeon had to work single-handed or with only the assistance of a part-time anaesthetist. He pleaded for more consideration for the county surgeon, who was expected to be a medical "Poo-Bah" by his patients and by the boards of health. If the hospital system was to be efficient the staffs of the county hospitals must be increased, and they must have closer contact and co-operation between the county and the city hospitals.

Honorary Fellowship for Sir John Moore

At a special meeting of the Royal Academy of Medicine in Ireland, held in the Royal College of Physicians on February 21st, the Honorary Fellowship of the Academy was conferred on Sir John William Moore. The secretary of the Royal Academy, Dr. T. P. C. Kirkpatrick, in introducing Sir John, said that for thirty years—from October, 1903, until October, 1933—he represented the Royal College of Physicians on the General Medical Council, and for a time was chairman of the Irish Branch Council. Sir John was visiting physician to Cork Street Fever Hospital for a number of years, and from 1875 until his recent resignation he was physician to the Meath Hospital. Dr. Kirkpatrick gave a history of the activities of the early medical societies in Dublin, including the establishment of the Royal Academy of Medicine. Dr. John William Moore, as he was then, became secretary of the foreign correspondence, with a seat on the General Council of the Academy. The former office he held until he became president in 1918, and to the latter he was elected annually until he was chosen as an honorary Fellow at the beginning of the present session. Another phase of Sir John's work—the editorship of the *Dublin Journal of Medical Science*, which extended over forty-seven years—was also referred to by the speaker. The President, Mr. R. A. Stoney, in conferring the honorary Fellowship, said that Sir John had given great service to his hospital—the Meath—and to countless numbers of the sick poor. He had served his College, the Academy, and medical journalism in Dublin well; by his life and his example he had served the medical profession in Ireland. As a token of esteem the Academy of Medicine had conferred upon him its honorary Fellowship, and as a token of their love and affection the members had added his portrait. A portrait of Sir John, painted by Mr. John Sullivan, was then unveiled. In returning thanks Sir John said that he looked upon them all as his friends, and thanked them from the bottom of his heart. He felt a little overcome by the occasion, and he would only say that he loved this College, and believed that its

traditions were being well maintained by those who now ruled its destiny. Sir John is in his ninetieth year, and is to be seen every day at the hospital engaged in the practice of his profession.

Belfast Hospital for Sick Children

The annual report of the Belfast Hospital for Sick Children stated that the year 1934 represented a period of steady expansion in all branches of the hospital's activities. In the wards 1,313 children were admitted, the number for the previous year being 1,242. The total attendances in the extern department reached the record figure of 61,075, compared with 55,792 in 1933, the new cases again exceeding the 20,000 mark. There were 2,464 surgical operations, and 1,770 *x*-ray pictures were taken. The massage and light departments continued to be of great service to children recommended for these forms of treatment. The report a year ago recorded that twenty-nine children had been admitted suffering from injuries received in motor accidents. In 1934 this number was increased to thirty-five, and beds in the surgical ward were occupied for a total of 1,295 days by these cases alone. Two children were beyond human aid on arrival at the hospital, and, in addition, ninety were treated in the extern department without being detained. The report stated that it had been decided to equip a department in which conservative dentistry for children might be carried on. The treasurer's report showed that there had been an increase in the payments by parents, and the income had increased by £1,272. As against this the expenditure had also increased.

Reports of Societies

RADIUM THERAPY: VALUE AND LIMITATIONS

At the meeting of the Medical Society of London on February 25th the subject for discussion was "The Value and Limitations of Radium Therapy." Lord HORDER, the president, was in the chair.

Mr. GEOFFREY KEYNES said that one of the advantages of radium was the large repertory of methods now available—interstitial needles, radon seeds, plaques, moulds, and massive radiation—adjustable to the individual circumstances and the particular kind and site of growth. Accuracy of dosage was continually increasing. Ten or twelve years ago dosage was empirical, but now, thanks to the physicist, a very considerable degree of accuracy was achieved. Confining himself to malignant disease, he said that the value of radium lay in two main directions: the palliation of inoperable disease, and the avoidance or mitigation of operation in operable disease. It was striking how much could be done in inoperable conditions with radium alone. Many patients by its means had been restored to comparative health and comfort, and occasionally such patients were found to have lived for many years without any signs of recurrence. It had been stated that the effect of radium on glandular metastasis was not so good as on the primary growth. In some situations that might be true, but after twelve years' experience of the use of radium in carcinoma of the breast he was convinced that the result of radium in the axilla was very good indeed, and glands obviously affected could be made to disappear permanently. Sometimes it was definitely safer to use radium than to carry out radical operation in tissues heavily infected with carcinoma, such as large glands in the axilla following carcinoma of the breast. In carcinoma of the mouth there were many awkward situations in which operation was difficult or impossible, such as the hard palate, fauces, floor of the mouth, and tonsil. In carcinoma of the tongue the position was rather more doubtful; the results of radium were not favourable, nor were those of operation, and statistics showed little to choose as between the two methods on the basis of the survival rate. Carcinoma on the surface of the body, which in most cases would mean an extensive and mutilating operation, could nearly always, so sensitive was the growth, be treated by radium alone. In carcinoma of the rectum an inoperable disease could sometimes be made operable by radium; radium was not curative, but it did palliate.

With regard to operable disease, the position of radium was more debatable, and there was a proper reluctance to discard the well-tried methods of surgery, where the results were known and established and the survival rates published. But surgical advances were nearly always in the direction of radical surgery—that is to say, there was more sacrifice of tissues or more mutilation. A recent memorandum by the Radium Commission considered the results of radium treatment in carcinoma of the breast, cervix, and mouth and tongue. A slight improvement in survival rate with radium was indicated, though the figures were not large enough for any final conclusion. One striking fact to which attention had been drawn in a recent issue of the *British Medical Journal*, following upon the report of the Commission, was that radium treatment in carcinoma of the breast was more successful as regards survival rate than was pure surgery as applied to carcinoma of the breast in Stage II—that is, the stage in which the primary growth was well advanced and there were secondary glands in the axilla. Mr. Keynes discussed some of the limitations and fallacies of statistics, pointing out, among other things, how statistics were affected by the patient's own preferences and aversions. Many women would rather die than have amputation of the breast, and that accounted for many such cases coming late to the surgeon. He maintained that in a great many cases nowadays radium was a reasonable alternative in carcinoma not only of the breast but of many other positions in the body. In rodent ulcer in almost any position excision could be avoided and an almost certain cure obtained by means of radium properly applied. In carcinoma of the lip surgery was still frequently used, but he was sure the condition could be cured practically every time by radium alone. In operable as in inoperable carcinoma of the tongue the results with either surgery or radium were not good, but of the patients who did survive those with a whole tongue were better off than those with half or less of a tongue. In carcinoma of the cervix he believed the position was strongly on the side of radium, and it was now generally accepted that, save in a very few hands, radium was the treatment of choice. In conclusion, after describing a number of cases followed up from Mount Vernon Hospital, he claimed that radium, when used within its own limitations, was capable of producing fairly uniformly good results. Whatever the limitations of radium, surgeons ought to be "radium-minded," and remember that conservative surgery was not necessarily the same thing as conservatism in surgery.

Mr. ERIC PEARCE GOULD spoke chiefly of the limitations attaching to radium. Radium was a local remedy. Evidence was entirely lacking that its effect on malignant tissues extended further than the area of local penetration. Therefore it fell into the same class of treatment as the knife or surgical diathermy. Limitations on radium were therefore imposed by the inaccessibility of the lesion. The successful use of any local remedy demanded that the lesion to be treated should be accessible. The whole tumour must be brought within the influence of a lethal intensity of radiation. There was also in practice some limitation imposed upon radium treatment by the practical difficulty of ensuring homogeneity of radiation over a surface or throughout a mass. In physics this difficulty had apparently been solved, but those who were interested in this subject would find both the theory and the practice discussed in a recent monograph by H. S. Souttar, and a mere glance would show into what depths of mathematical learning the poor clinician must be drawn if he set out to master radium technique. He next discussed the relation of highly differentiated growth and radio-sensitiveness. Fortunately, there appeared to be a large group of neoplasms which, while moderately differentiated in cell picture, and of correspondingly slow spread, were moderately radio-sensitive, and radium had gained some of its greater successes in this class of case. Further

research in dosage would bring an increasing variety of tumours into the radio-sensitive class, and so break down here and there the limitations imposed by radium resistance. Was it possible to define the fields within which radium therapy was confined? Very briefly, at the moment radium could not hopefully be used as a curative agent for growths within the abdomen, in the gastro-intestinal tract, the liver, and pancreas, leaving as debatable ground the lungs, gullet, and bladder.

When all was said as to the value of radium, therefore, it was at best a remedy available for the treatment of not more than just over half of all cancer cases. The field of radium's usefulness might be still further contracted by the inexperience or want of facilities of the user. There were limitations imposed by the quality and quantity of radium available. He recalled the days when the only radium in use consisted of a few needles, which were used in inoperable cancer of the cervix uteri, a condition calling for large concentrated units, and some results were forthcoming sufficient to sustain the enthusiasm of the pioneers. At least in the large radium centres the radium was now made to fit the patient, and not the patient the radium. But too many institutions possessed only a small quantity of radium, thus imposing an inelastic treatment. If teleradium in large units gave results that were greatly superior to any obtained by implantation or surface application, there should follow a concentration of the work to those centres where this massive radiation was available. Mr. Gould spoke of the importance of the role of the pathologist and of the surgeon in radium treatment. There remained a great scope for surgery even when radium was the primary method. *X* rays were also a necessary auxiliary. He concluded by saying that while there were definite limitations attaching to radium *per se*, it was none the less their business to recognize those other limitations which could be removed if the facilities for radium treatment were wisely organized. If it was desired that radium should occupy its true place in cancer therapy it must be concentrated in large quantities in a limited number of institutions where, for choice, the specialists who controlled it were also in charge of modern *x*-ray plants, and had the best pathological and physical services at their command.

Mr. H. S. SOUTTAR said that it was impossible to separate radium therapy from other forms of therapy, and it was fundamental that radium work should be carried out, not by people who had given up their lives simply to radium, but by those who had some experience of surgery. The matter was one for the association of surgeons, radiologists, and physicists. The problem of obtaining a flat field for radium, for example, was one for the physicist to solve. Some work on large radium units had lately been carried out, and while he was not permitted at present to divulge fully the results, he thought he could say that success in one respect—namely, the treatment of glands, where the use of radium by insertion was not applicable—had been very marked indeed. Coutard had used deep *x* rays in glands with good results, and he had reason to suppose that by the use of large radium units the results would be even more remarkable. It was often stated, particularly in popular journals, that if only cases of carcinoma could be obtained early enough more brilliant results would be forthcoming. But for his own part, if he wished to get a first-class set of radium results, he would avoid all early cases. Let it be supposed that 50 per cent. of cases of carcinoma of the tongue produced secondary glands in the neck. The man who was out for statistics pure and simple would wait until he could divide his cases into those which were going to produce secondary glands and those which were not, and then, having selected the latter for radium treatment, he could get a brilliant series. The speaker had actually found from his own statistics that the results were incomparably superior in the cases that he had not seen too early—cases in what he might call the second-class group, where the carcinoma had gone on for rather longer than one liked. Some of the very worst cases he had seen in his life had been very early cases of carcinoma of the tongue or of the breast, which had been followed by rapid and extensive glandular spread. He was all for getting cases as early as possible, of course, but one should be extremely cautious in prognosis in early cases.

Mr. DUNCAN FITZWILLIAMS said that it seemed to be a sort of axiom that if any result was to be forthcoming from radium it would only be in the accessible carcinomata. It was quite true that 45 per cent. of carcinomas were in inaccessible positions in the body, and therefore radium could not be expected to produce the results that followed other methods of treatment in those situations; on the other hand, in the inaccessible positions treatment by surgical means pure and simple was remarkably bad, simply because there were no means of diagnosing the condition in the early stages—one had to wait until the symptoms drove the patient to operation. Whether block dissection was of any great assistance in glands in the neck he was not sure. In the vast majority of cases where he had done block dissection and the glands had not been found infected at all, the patient had remained well, in which case no dissection need have been done; similarly, in the vast majority of cases where the glands had been found infected on block dissection the patient had died within five years. Glands in the axilla secondary to carcinoma of the breast reacted to radium possibly better than carcinoma anywhere else in the body, and he thought it would be better if all infected axillary glands were treated with radium in preference to operation.

Dr. MALCOLM DONALDSON wholly endorsed Mr. Pearce Gould's view that it was unfortunate that radium in small packets should be spread all over the country; yet what could one do when the Archbishop of Canterbury appealed in the *Times* for more radium for small hospitals in Kent? He could not quite gather from Mr. Souttar's argument whether he meant that a case which was treated in its very early stages was more prone to recur. If that was his idea it raised a very interesting question. Was it possible that until the body had acquired a certain resistance to a virus it was of no use breaking down the malignant cell, because secondary growth would occur? With regard to the value of *x*-ray therapy, he felt that with the advent of high-voltage machines it would be possible to replace teleradium. When two-million-volt machines were available it would be possible to obtain the majority of the short wave-lengths found in radium.

Mr. JOCELYN SWAN agreed that glandular metastases were susceptible to radium treatment, but he found a difference between the glandular metastases in breast cases and those in the neck in a case of carcinoma of the tongue. He did not think the neck with secondary glands could be treated with the same prospect of success. He therefore preferred in every tongue case to do a complete block dissection, whether the glands were palpable or not, though he always employed subsequent radium treatment. He thought the combination of surgery and radium should be more explored. The question of radium treatment really came down to team work, in which the physicist also played an important part. As for high-voltage machines, these had been used for some time at the Cancer Hospital, and, he was inclined to think, with improved results. But the pendulum was now swinging the other way. Some who had lately been visiting Berlin had seen there a new low-voltage machine, for 600 volts, whereby *x* rays could be applied to a growth within a few centimetres, and could be used for growths in the tongue, the skin, and superficial carcinomata generally, with results almost exactly comparable with those from radium. The speaker went on to refer to the alleviation obtained in cancer of the breast by radium. But out of seventeen cases of inoperable carcinoma of the breast which he had treated by radium and brought to a condition in which a radical operation was advisable, only six on microscopical examination showed the breast to be cancer-free.

Mr. GEOFFREY KEYNES, in reply, said that he frankly disbelieved in Mr. Souttar's paradox. It appeared to him that Mr. Souttar was arguing from the special to the general—always a dangerous thing to do. As regards

carcinoma of the breast his own experience was totally different. In the last seven years he had treated between thirty and forty patients with really early carcinoma of the breast. Of these patients one had died from metastases and one from recurrent disease ; the former died in the normal way, with no particular acceleration of the metastases. Except for these two patients all the others were perfectly well, without any signs of the disease. He could not speak with authority on carcinoma of the tongue from the same point of view, but he did not believe Mr. Souttar was right. He agreed with Mr. Jocelyn Swan as to the difficulty of sterilizing large growths in the breast when there were inoperable masses present.

Mr. PEARCE GOULD, taking up Dr. Donaldson's point about the Archbishop of Canterbury's appeal, said that it was an appeal for three distinct centres which were designed to cover the county of Kent, and whilst it might be a maldistribution, it was none the less a recognition of the desirability of having definite centres for an area, to which properly selected cases could be sent from other hospitals.

GASTRO-COLIC FISTULA

At a meeting of the Section of Surgery of the Royal Academy of Medicine in Ireland, held on January 25th, with the president, Mr. SETON PRINGLE, in the chair, Mr. J. OWENS read notes on two cases of gastro-colic fistula.

The first was a male, aged 42, who, in 1922, was operated upon for perforated duodenal ulcer, gastro-enterostomy being performed fifteen months later. When seen symptoms of gastro-colic fistula had been present for about six months. Diagnosis was confirmed by washing the stomach, and, while the stomach tube was in position, giving an enema containing methylene-blue. At operation the colon was dissected from the stomach and jejunum, the indurated margin of the fistula removed, and the opening in the colon closed. The gastro-enterostomy was then resected, the ulcer excised from the posterior wall of the stomach, and the gastric and jejunal openings closed, there being no evidence of active ulceration in the duodenum. The patient had since done very well.

The second case was that of a male, aged 35, who had had gastro-enterostomy performed in 1930, and had developed symptoms of gastro-jejunal ulcer three months later. When seen in 1931 he was suffering from vomiting, diarrhoea, and foul eructations, and the presence of a gastro-colic fistula was confirmed by the method used in the first case. At operation the colon was dissected out of the indurated mass, the opening in it was closed, the gastro-enterostomy was enlarged, and the ulcer dissected from the jejunum and posterior stomach wall. However, thirteen months later he again developed a fistula. This time a procedure similar to that described in the first case was carried out ; the ulcer was left adherent to the stomach, and, as it involved the whole circumference of the jejunum, it was necessary to divide the bowel transversely. Some of the posterior stomach wall with the ulcer was then resected, and the opening in the stomach closed. Some time after this the patient developed intestinal obstruction, due to a band. He was operated upon for this, made an uneventful recovery, and has remained well since.

The PRESIDENT said that it was interesting that the first patient remained well for three years after gastro-enterostomy ; symptoms of recurrent ulceration usually developed within one year. Mr. T. J. D. LANE thought the only easy thing about a gastro-colic fistula was the diagnosis. He mentioned the occasional occurrence of ulcers, apparently primary, in the jejunum. Mr. M. J. BURKE considered these cases very difficult to deal with ; the cause of gastro-jejunal ulcer was yet an unsolved problem.

Mr. F. J. HENRY said that, so far as he could judge, the most important factor in preventing recurrent ulceration was prolonged post-operative alkalinization, and, particularly, avoidance of smoking. Gastro-colic fistula sometimes occurred without actual ulceration, through a small segment of transverse colon being inadvertently nipped by the jejunal clamp.

Surgery of Prostatic Obstruction

Mr. T. J. D. LANE read a paper on some recent developments in the surgery of prostatic obstruction. Opening with a brief résumé of Randall's views on the pathology, he followed with a short description of the technique and results of transurethral resection of the prostate and of Harris's suprapubic prostatectomy with closure. A contrast was drawn between the complexity of the problem and the technical difficulties of to-day and the simplicity of the position twenty years ago. The paper concluded with a plea for bringing the Dublin system of surgery into line with modern requirements.

The PRESIDENT said that prostatic surgery was very specially skilled work, and should be left entirely to urologists. He felt that as time went on the indications for transurethral resection would be even more limited than at present. Mr. F. J. HENRY said that Mr. Lane had emphasized the importance of careful investigation of all prostatic cases, particularly urethroscopy. Mr. A. L. BUTLER stated that he had carried out transurethral resection in twelve cases, eight of which were malignant, and so far he had had no deaths. He had, however, selected the cases carefully.

Mr. F. J. MORRIN said that transurethral resection should not be undertaken by anyone who was not specially skilled. He had met with one case of very severe haemorrhage. Recent advances in prostatic surgery had made the subject a particularly difficult one. Mr. P. J. SMYTH recounted the technique of transurethral resection as carried out in the clinic of von Lichtenberg, who attributed his successful results in most cases to early diagnosis. It was necessary to have one particular assistant, specially trained in the use of the diathermy apparatus. Mr. LANE, in reply, said that nobody in Dublin got enough prostatic work to come to any useful conclusion. Prostatic calculi were not suitable for resection ; cases of subcervical hypertrophy were always good. He thought that the mortality of prostatectomy would always be determined by the standard of cases that came to the surgeon.

PRAGMATISM AND PSYCHOLOGY

At a meeting of the Medical Society of Individual Psychology on February 14th, with Dr. JAMES YOUNG in the chair, Dr. C. W. J. BRASHER read a paper on "The Pragmatic Value of Individual Psychology."

William James affirmed, said Dr. Brasher, that the truth of an idea could be determined by its applicability to human experience. The present age was dissatisfied and disillusioned. Idealism had been largely displaced by hedonism. While scientific thought had rebelled against nineteenth century materialism, modern developments of physical science—aerial and chemical warfare—were threatening the destruction of civilization. Psychology, if placed upon secure foundations, might assist in averting this catastrophe. Agreement upon general principles was essential: yet there was no evidence that the rival schools of psychological thought would be reconciled. Intolerance and dogmatism had caused wide and deep cleavages. Freud's insistence on the "libido" and absence of logical argument in his writings estranged Jung and Adler, while Freud expelled W. Stekel in 1913. Adoption of many pseudo-scientific terms had produced further confusion, but the essential difficulty lay still deeper. Freud's rigid psychological determinism assumed that "identical causes produce invariably identical effects." This was contrary to human experience. The majority of mankind had believed always in a modicum of spontaneity or free will. Determinism would deprive humanity of any incentive to ameliorate existing conditions. Freud's doctrines were changing constantly. Of eight patients, investigated by Dr. Brasher, who had been admitted to psycho-analysis, three committed suicide and a fourth made two suicidal attempts. Such cases suggested to him that psycho-analysis ought not to be employed until other psycho-therapeutic methods had failed. Psycho-analysis fostered dependence upon the physician, while individual psychology required mutual co-operation. Adler asserted: "The meaning of life is co-operation" ; he anticipated Smuts's concept of "holism" and abandoned dualism in medicine. Individual psychology was dynamic, idealistic, and teleological, and gave a fully adequate reply to William James's postulates: "How does it work?" "What will be its ultimate effect?"

At a meeting of the Cork Clinical Society on February 2nd Professor J. C. SAUNDERS read a paper on "Recent Trends in Diphtheria Prophylaxis." He dealt first with the two commonly used prophylactics T.A.M. and T.A.F., dismissing the first product as giving a low and tardy immunity. He then discussed the lesser-used F.T., and, lastly, gave his experiences with a new alum-precipitated toxoid which, though as yet not available for general use, he found gives a most satisfactory and rapidly developed immunity with one injection. This product he thought the best so far produced, but of those available for use by the ordinary practitioner T.A.F. in two injections, at an interval of a few weeks, is the least troublesome and gives a very high degree of immunity. He dealt further with the Moloney test and the effect of widespread immunization on the incidence and severity of diphtheria among the non-immunized.

CORRESPONDENCE

The number of letters received for publication is so large that we must ask correspondents to make their points briefly and to regard 600 words as the upper limit of length.

Hypertrophic Stenosis of the Pylorus

SIR,—I wish to support entirely Mr. Twistington Higgins's (February 9th, p. 277) letter upon this subject and the importance of the tumour. Over a period of ten years I gave particular attention to the question of the palpable tumour, and published in the *Practitioner* the result of this investigation, which in some respects was remarkable. It was remarkable because I based my view upon one hundred consecutive cases seen personally. The tumour was demonstrated to others and confirmed by them. Every case was operated upon, and the tumour demonstrated by the surgeon and seen by others present at the operation.

Far from this sign leading to delay in operation, the danger—a very slight one—is that an operation may be done too soon, because, as Mr. P. T. Crymble points out (February 23rd, p. 388), and I agree, it is difficult in rare cases to decide whether there is a tumour or an unusually palpable pylorus. My experience had been that when the latter was the case, and the condition one of "pylorospasm" occurring in rather older infants, the case did not benefit. The tumour may be difficult to find if high up under the liver or far out over the right kidney, or if the large stomach when empty covers it up. These difficulties are now known, and are met by more careful observation and training.

How many cold and purposeless hands have I seen, I wonder, put over the infant's abdomen? Such hands might find a cricket ball, but not a pyloric tumour. The tumour, I maintain, is the surgeon's sheet anchor, and it should be the international standard for the comparison of surgical results. How it arises is indeed a pretty question. Personally, I have abandoned a crude congenital theory, though I would not refuse some mysterious congenital nervous fault. I confess to a leaning to an acquired development in some cases, and nothing has struck me more than the repeated and frequent struggling contractions of a pylorus of this kind, even after the stomach has been given only a little sugar and water.

I would not be mistaken and claim to say that you feel the tumour every time at a *first* examination: you don't, but you do within thirty-six hours, and a life is worth more than one attempt. I do not hesitate to write that I look back with satisfaction on the lives I have helped to save: yet not I, but the surgeons and my nurses, guided by the finding of the pyloric tumour.—I am, etc.,

London, W.1, Feb. 23rd. F. JOHN POYNTON.

The Patient's Attitude

SIR,—May I express my appreciation of Dr. Hardcastle's letter, on the registration of osteopaths, in your issue of February 2nd, especially where he stresses the importance of the patient's attitude towards his illness. Apart from the sufferer's own contributions, his entourage has to be considered. This fact receives recognition in the popular tale of the man who prayed: "Lord, save me from my friends, and I will look after my enemies myself!" It has been truly said that the relatives of the sick often require more treatment than the patient. It is commonly part of the duty of the doctor to divert from his charge a stream of adverse influences—open, covert, unconscious—often arising from the best of motives, sometimes from the worst, which may strain to the utmost his tact and powers of judgement, if the optimum issue is to be achieved.

Take the case of a woman who has experienced a cerebral lesion, associated with disturbance of orientation in time and space, when the acuter phases of the "stroke" are passing off and the residual elements are becoming chronic. From being the well-adjusted administrator of a home and household, with habits attuned to the requirements of her position, her relationship to her family may be profoundly changed. She is no longer to be taken seriously; she is labelled "queer," as "not right in her head since her illness," and treated accordingly, a vicious circle being set up of a kind not difficult to visualize. It is true that her discrimination between "here" and "now" and "there" and "then" may have become so far confounded that she is no longer capable of managing her personal and household accounts and disbursements, perhaps not even able to attend adequately to clothes and cleanliness—a state of affairs calculated to induce a sense of misery—which makes her irritable and querulous. But she is none the less acutely aware of her changed estate and of her loss of most of the little amenities that make for the content of an average woman.

It is not enough in such cases to prescribe no more than routine treatment of rest, careful dieting, massage to restore muscular tone and function when the chronic stage has supervened, and so forth. The aim should include the preservation or restoration, as far as possible, of the *status quo ante*; to insist that the patient should be treated in every way feasible as a normal person. Her opinion or approval of various matters may be solicited; she may be allowed to disburse small sums of money if she has been adjudged incapable of handling large ones. And it is well to remember that a woman does not cease to be a woman after the menopause. I have known a new fur coat to have a surprising effect on a Parkinsonian gait.

A patient handled on these lines as a person *compos mentis*, even if the practitioner thinks her otherwise, will feel disposed to abandon her quasi-paranoiac attitude towards life, wherein, to adapt a famous phrase of Pascal, her whole universe is arming itself to crush her. It is possible in this way to convert a miserable woman into a relatively happy one. Trousseau summed up the whole matter in another well-known saying: *Il n'y a pas de maladies, il n'y a que des malades.* Even if the successful charlatan has never heard this dictum he has adopted it in practice as his guiding principle, and scores, at times, accordingly.

If every practitioner were to study such works as Havelock Ellis's *Man and Woman*, or Harry Campbell's *Differences in the Nervous Organization of Men and Women*, in conjunction with the saner expositions of modern analytical psychology, he would find himself in a far sounder position to deal with guerilla assaults from

irregular competitors. In conclusion, I would suggest that the old tag *Fas est et ab hoste doceri* still holds good.—I am, etc.,

Sandgate, Feb. 9th. J. STEWART MACKINTOSH.

The Riddle of the Psychoses

SIR,—Dr. Ian Suttie's letter in the *Journal* of February 16th and the replies in the following issue appear to the general practitioner to be of more than ordinary importance. We are confronted by little success in the treatment of mental disorder. The mental hospitals are maintained at great expense, are superintended by extremely capable men, and are supervised by a very active Ministry of Health. With all this, mental disease, using a loose and indefinite term, is not as successfully treated as could be wished. The present approach to the problem may be wrong, and Dr. Suttie's suggestion that the subject should be considered fundamentally as that of "failure or distortion of social adaptation" opens up a line of attack capable of considerable optimism in outlook.

It might usefully be considered whether there should be separate and individual institutions for treatment of mental disorder. It would be better to have them as a department of the ordinary hospital. A patient requiring in-patient treatment by a psychiatrist, but who still has insight, will be damaged to a greater or less extent if he knows, as he almost always does, that he is to be treated at a mental hospital. And when he is discharged "cured" he is not helped by the thought that he has such a history behind him. A step in the right direction was taken when the name "lunatic asylum" was abolished, but there is quite a long way to go on these lines. The word "mental" itself is not necessary, and could usefully be replaced by "psychological." It is quite true that many mental patients cannot be treated at home, and it is also true that to create a large mental in-patient department at the existing hospitals is a vast problem, but the question must be tackled, and methods of treatment other than those at present in vogue should be investigated.

In view of the suffering and lack of efficiency (loss of work) and the questionable success at present obtained, greater efforts are required to deal with the problem than we have at present, even granted the enormous improvement over methods in use a hundred years ago. Probably the most valuable part of Dr. Suttie's suggestion is in preventive treatment, and this is in part the getting in touch with disorders of behaviour in childhood. Here the child guidance clinics are a welcome sign of new and progressive thought in psychiatry.—I am, etc.,

London, N.W.11, Feb. 22nd. L. STUART WOOLF.

The Report on Fractures

SIR,—After stating that

(1) "It does appear to be vitally important that every hospital which proposes to deal with fractures should segregate its cases, and establish one, and only one, organization;

(2) "Duplication leads to confusion and loss of efficiency, and only by establishing one invariable routine of organization may it be certain that no case can escape from the routine and fail to receive that daily personal supervision of the expert which is so essential;

(3) "Only by segregation can the staff become sufficiently highly trained, skilled, and experienced in the technical application of modern methods and in the handling of special appliances;

(4) "Segregation, continuity, and after-care achieve their greatest value only if there is unity of control"—

after these most definite pronouncements, with which all who have a large experience of fractures will heartily agree, there occurs the following sentence, which entirely negatives their value: "*The position may arise where members of the staff other than the fracture surgeon desire to treat cases of fracture in which they are interested. There should be no difficulty in providing for this.*" (The italics are mine.)

Once admit the right of any surgeon to have control of any fracture in which he is particularly interested, and the whole authority and usefulness of the fracture surgeon disappears. The committee evidently realized this, for further on in the report it reiterates its previously expressed opinion in the following terms: "It is essential that one surgeon should be in charge of the service"; and again, "It is quite certain that no fracture unit will be satisfactory . . . which does not conform to the principles of continuity of treatment and unity of control." How this italicized sentence has got into the otherwise excellent report passes my comprehension, but I do most earnestly suggest that before this report is presented in July the paragraph containing it be entirely deleted.—I am, etc.,

PAUL BERNARD ROTH,
Orthopaedic Surgeon, with Charge of Fractures, North Staffordshire Royal Infirmary.

Newcastle, Staffs, Feb. 19th.

SIR,—I have read with considerable interest the report of the committee on the treatment of fractures, published in the *Supplement* of February 16th. The amount of work done and the figures published to support the statements and recommendations are indeed amazing, but after careful study I doubt if the "look on this picture and on that" method of considering the period of incapacity proves anything, or that many of the statements, in the report as a whole, are correct.

It is indeed unfortunate, though perhaps natural, that a few hospitals have been held up as models and have received special commendation. In this instance it is peculiarly because the hospitals so praised have, with two exceptions, all been represented on the committee. The statement made in the report that "the committee has carefully investigated the fracture services of the large hospitals in the country" is also open to a considerable amount of doubt, and the leading article published in the same issue, in which the organization of fracture treatment in Liverpool was erroneously attributed to one particular surgeon, leaves one with the impression that the work of the committee was not so full as it might have been.

In regard to the investigation which the committee says it has made into the treatment of fractures in the large hospitals, my own knowledge on this point is based on the work of the David Lewis Northern Hospital, Liverpool, which is a teaching hospital where at least 1,000 fractures are treated annually. Here the methods and principles of Sir Robert Jones are still carried out in an orthopaedic practice which was originated in 1920, and which has dealt with all fractures—both in-patient and out-patient—since that date. A questionary sent to this hospital would have prevented the misstatements already quoted and given one more confidence in the rest of the report. This may have been an oversight, but without doubt the most astonishing part of this scientific report is the section on the period of disability. Of what possible value are the statistics published in that section? And what a surprising disparity in the types of fracture: 452 Colles fractures and only forty-five fractures of shaft of femur, 132 fractures of the carpal scaphoid and only forty fractures of the forearm. One idly wonders what has happened to all the other fractures of the femur and forearm which must have occurred in the vicinity; and how was it they missed the advantages which their companions, and possibly neighbours, were so fortunate to obtain! And the comparison of the results of 452 Colles

fractures treated at two special clinics with a paltry thirty-eight about whom insurance companies were getting so worried that they thought a second opinion desirable diminishes the value of the very important generalizations of the succeeding paragraphs based on information received from insurance companies. In any case, of what value are statistics which do not inform us on what type of work the patients are engaged? Most surgeons have had patients suffering from a fracture of the femur who have been clerks, commercial travellers, or farmers in their own employ, and have returned to work wearing a calliper twelve weeks after the injury. A general labourer is fit for his work when he has free flexion of 90 degrees in his knee; but a miner, on the other hand, cannot return to work in a low mine until he has absolutely full flexion of his knee, and obtaining the last 20 degrees of flexion increases the period of incapacity considerably.

I do not wish, however, to appear to disparage the work the committee has done. The idea of the investigation was an excellent one, long overdue, and the conclusions the committee has formed as to the best way of obtaining this improvement are thoroughly satisfactory, and have the soundness of a well-established fact. The committee has suggested what was carried out under the guidance of Sir Robert Jones during the Great War, and it is to be congratulated in bringing once more to the notice of the country the organization Sir Robert worked so hard to obtain from the War Office twenty years ago. But the report would have been of more value had the committee stuck to generalizations and been content to use the information it had received from disinterested insurance companies to emphasize the importance of continuity of treatment. It would then have avoided any suggestion that the work of the committee had been conducted on too narrow a field, and have prevented the possible publication of a spate of statistics which, like those in the report, can be made to prove anything.—I am, etc.,

Liverpool, Feb. 25th. W. J. EASTWOOD.

Endoscopic Resection of the Prostate

SIR,—The statement by Messrs. R. W. Doyle and G. Y. Feggetter that spinal anaesthesia is unsuitable for endoscopic resection of the prostate has already called forth comment from Mr. Dickson Wright. I should like to add my experience to his.

At the Association of Surgeons meeting in Manchester in 1933, during a discussion on spinal anaesthesia, Mr. Dickson Wright made, to my mind, the astonishing statement that he habitually used spinal anaesthesia when dealing with out-patients suffering from minor bladder and rectal conditions. The technique he advised consisted in the injection of 5 or 6 minims of a 20 per cent. solution of planocaine into the spinal theca. This planocaine is a specially heavy solution (supplied by Messrs. May and Baker) to ensure gravitation towards the caudal end of the theca, with the patient in a sitting position. The spinal needle used is a very fine one, devised by Mr. Dickson Wright. This small dose of a heavy solution of planocaine causes paralysis of the first to fourth sacral nerves. Pain is absent within five minutes of the injection, and the anaesthesia lasts for two hours generally, and never for less than one hour.

During the last twenty months I have used this anaesthesia exclusively for endoscopic resection. It is equally good for the treatment of painful bladder conditions, such as calculus necessitating lithotrity, coagulation of extensive tumours, and cystoscopic examinations in cases of tuberculous ulceration. It can be safely used in out-patients provided they are kept resting in a semi-recumbent position for two hours after the anaesthesia has passed off. My experience amounts to close on one hundred cases, and the only ill effect was in two patients who complained of headache for a few days—in one of these the headache was severe, but his recovery within a week was perfect. With in-patients one nembutal capsule is given an hour prior to the operation. There is no pain, perfect relaxation, and the drop in blood pressure has never exceeded 10 mm. of mercury. The patient generally dozes quietly throughout the operation. Dr. H. P. Fairlie has administered this anaesthetic in all my private cases which I considered suited to it, and, in addition, he informs me that he has given it in many cases of perineal and vaginal operations in gynaecology. His series of cases treated by this method now amounts to well over a hundred, and he has nothing but praise for it.

I note that Mr. Terence Millin states, in his letter to you of February 4th, that he prefers, in a number of instances, especially where extreme hypotension or hypertension is present, an extradural caudal block, supplemented, if necessary or desired, with gas-oxygen. In my opinion extradural sacral block anaesthesia is uncertain in action, difficult in performance, and not so safe as the low spinal method advocated by Mr. Dickson Wright. In conclusion, might I say from my experience, and that of my colleague Dr. Fairlie, that the method of low spinal anaesthesia as advocated by Mr. Dickson Wright is the most suitable, reliable, and safe anaesthesia familiar to me for endoscopic resection of the prostate. I consider that it deserves to be known better than it is.—I am, etc.,

Glasgow, Feb. 25th. WALTER W. GALBRAITH.

SIR,—Messrs. Doyle and Feggetter have been adversely criticized for recommending sacral anaesthesia as a routine in the operation of endoscopic resection of the prostate. Low spinal anaesthesia is advocated instead. With this view I entirely disagree. Sacral anaesthesia correctly given is safer and just as reliable. Failures are due to faulty manipulation of the needle or to haste in operating. It is necessary to wait for fifteen or twenty minutes after injecting the novocain. I have never seen any ill effect following sacral anaesthesia, which is my anaesthetic of choice for endoscopic resection. If there are anatomical difficulties in introducing the needle, or if the patient is of the nervous and apprehensive type, then I favour avertin or evipan, followed by gas and oxygen.

Two writers have criticized adversely the undercutting of the lateral lobes as being inadequate. With this also I disagree. The amount of undercutting varies according to the degree of enlargement, and in some cases as much tissue is removed from the lateral lobes as from the middle. There is danger in resecting the lateral lobes too anteriorly, because the endothermy current has a distal as well as a local effect, and there is little or no prostatic tissue in that region to act as a buffer. I have seen extravasation of urine into the cavum Retzii and damage to the prostatic plexus of veins follow too bold an attempt to plane down the lateral lobes. Complete removal of middle-lobe obstruction with sufficient lateral lobe undercutting gives free and uninterrupted micturition.

As regards multiple sittings, this may be necessary in those cases which bleed freely and curtail the scope of the operation through diminishing vision, but I have not, so far, had to repeat a resection. In carcinoma, of course, multiple sittings will be required, but in cases of carcinoma I prefer a permanent suprapubic drain.—I am, etc.,

London, W.1, Feb. 18th. F. McG. LOUGHNANE.

Corpus Luteum Extract and Uterine Contraction

SIR,—Dr. Chassar Moir replies in your issue of January 12th (p. 82) to my letter in the *Journal* of December 22nd, 1934, in which I raised a point concerning the differences in his work and that of Professor Knaus, on human uterine contractility. A part of my letter, to which Dr. Moir makes special reference, is not understood by him. I did not say that he distends the uterus "chemically"; but, rather, that if contractions are induced by distension (mechanical stimulation) or by chemical means (for example, vasopressin), the contractions give a net recorded effect of considerable magnitude when uterine tone is low, and the intrauterine balloon relatively more distended, than when the tone is high. I offered no suggestion as to why Dr. Moir obtained contractions at any time in the cycle with vasopressin, and Professor Knaus does not, with pituitrin. I accepted the facts as Dr. Moir certainly finds them, and only wished to dwell on the consequences of such contractions, when the tone is low in one instance and high in the other.

I agree with Dr. Moir that my suggestion does not adequately explain the discrepancy in the point which I raised, since conditions in the work of both Dr. Moir and Professor Knaus are somewhat similar. My criticism should apply with equal force to the work of both investigators. It will be interesting, therefore, to see what the results of direct experimentation, which Dr. Moir promises in this connexion, may hold.—I am, etc.,

SAMUEL R. M. REYNOLDS.

Long Island College of Medicine,
Brooklyn, New York, Feb. 5th.

Reactions following Gold Injections

SIR,—Referring to the letter of Drs. Hartfall and Garland in the *Journal* of February 9th (p. 276), on the toxic reactions following gold injections in rheumatoid affections, these appear to be similar to the reactions obtained in cases of pulmonary tuberculosis when too large doses are given. I would therefore like to suggest that the simple control tests which are done here at the sanatorium (and which were suggested by Dr. L. E. Haughton of Colindale Hospital in an article published in *Tubercle* in 1932) might be of use in cases other than tuberculosis treated by aurotherapy. These tests consist in taking the blood sedimentation rate, the differential blood count, and the von Bonsdorff, before beginning the injections. After each injection the procedure is repeated.

Speaking generally, when the optimum dose is reached the polymorph-lymphocyte ratio becomes smaller than the mono-lymph ratio, and the von Bonsdorff count reaches its highest value. At this stage an increase in the dose of gold generally reverses the blood picture, and toxic symptoms are likely to appear, especially if there is a definite rise in the sedimentation rate. On the other hand, if at the next injection the preceding (and smaller) dose is given, there is an immediate improvement in the blood picture and in the von Bonsdorff count. Rashes, etc., are now not likely to appear, and clinically there is definite and progressive improvement in the condition of the patient.

As these tests have, so far, been used here in a comparatively small number of cases, one does not wish to dogmatize. But they are certainly very suggestive, and one gets the impression that with more experience and a better appreciation of their value it should not be difficult to eliminate cases that are unsuitable for treatment, or to arrive at the optimum dose when the case shows signs of reacting favourably.—I am, etc.,

FELIX SAVY.

Grampian Sanatorium, Kingussie,
Inverness-shire, Feb. 23rd.

Treatment of Cerebro-spinal Fever

SIR,—I am in complete agreement with the views expressed in the letter of Dr. W. M. Feldman in the *Journal* of February 16th (p. 328), in which he advocates the advantages of the cisternal route for the administration of serum in cases of cerebro-spinal fever. For the last few years I have used intracisternal injection in preference to lumbar injection, and while I regret that my statistics are not at hand at the moment of writing there is not the slightest doubt in my mind as to the greatly superior results obtained by the former method. Not only are the results better with cisternal puncture, but the ease with which intracisternal injections are made renders the method preferable to lumbar injection. A dry cisternal tap is a rarity, and the serum flows in much more easily than it does through a lumbar tap. I have never seen any untoward results which could be ascribed to this method, though in one case there was a temporary facial paralysis lasting for a few minutes associated with some slight respiratory embarrassment. General anaesthesia is very seldom required, even with patients who are restless or who have great retraction of the head. In my opinion the method is as safe as lumbar injection in the hands of a capable operator, and very much easier.

I have used intracisternal injection of serum also in the treatment of tetanus in a fairly large series of cases, and here again I am convinced of the fact that very much better results are obtained than if the lumbar route is used. In cases with opisthotonos, cisternal puncture is possible under local anaesthesia, whereas lumbar puncture is difficult or impossible without general anaesthesia.—I am, etc.,

Edinburgh, Feb. 18th. DOUGLAS ROBERTSON.

Diphtheria Immunization

SIR,—It seems to me rather unfortunate for writers to decry "one-shot" or "two-shot" methods of immunizing against diphtheria without advancing any evidence of the efficacy of these methods. The orthodox "three-shot" method may at present be the best to employ at clinics, but to the general practitioner the "one-shot" method has many advantages when applied to the type of child who will not go to the clinic.

In the correspondence I have so far read no one has suggested that the "one-shot" method is less efficient than the "three-shot," and the only case actually recorded of a bad local reaction was in a man aged 40.

The more widespread preventive inoculation becomes the greater will be the Schick-negative school population and the greater the proportion of diphtheria carriers, and, consequently, the greater the risk of infection to the unprotected minority. It seems, therefore, to me a mistake to condemn a method which might go far in making protection universal. Until definite statistics can be given of severe reactions in children and of the inadequacy of the protection of the alum-toxoid, this method should still be on its trial. In the cases I have immunized myself the alum-toxoid has given but slight local reaction.—I am, etc.,

Stechford, Feb. 23rd. H. G. LANGDALE-SMITH.

Spinal Anaesthesia

SIR,—As a user for some years past of spinal anaesthesia for operations involving the upper abdomen (partial gastrectomy, cholecystectomy, resections, and the like), I read with interest Mr. Flint's paper in the *Journal* of February 2nd (p. 197), and his additional communication in the issue of February 16th (p. 331). I have always used the high-density anaesthetic, stovaine, for operations involving the upper abdomen and the low-

density spinocaine for those involving operations below the umbilical level. My experience between two hospitals has involved the use of spinal anaesthesia in well over two thousand cases. I have used it also in combination with amnesics—notably avertin—and in less degree with the barbiturates, gas and oxygen, and with morphine and hyoscine. Its use is undoubtedly enhanced by an amnesic or some suitable deterrent to the patient's consciousness of his surroundings.

Mr. Flint stresses the fall in blood pressure. This undoubtedly occurs, and although it may in some part be central (it invariably happens when the high-density solutions are used) it is, I am convinced, in large part due to paralysis of "muscle tone," which takes place to the level at which anaesthesia is obtained. Loss of muscle tone leads to blood pools accumulating in the muscles below the line of anaesthesia. The simple preventive of bandaging both lower extremities with silk-covered elastic bandages has sufficed in most cases to prevent any striking fall in blood pressure. Still, over a large number of cases there are instances, occurring chiefly in stout people—very few in my own experience—where symptoms suggesting bulbar interference occur. They manifest themselves some fifteen minutes after the giving of the anaesthetic, and are nearly always respiratory in character, with a fall in blood pressure. In every instance that I have experienced, adrenaline, 7 minims, given intravenously, has immediately and permanently relieved the situation.

I have used icoral since it was introduced to me some time ago, but I cannot see that it is any better in its effects than adrenaline given if required. In my experience the fact must be faced that spinal analgesia is not without its after-effects, both immediate and remote, and I am now rather abandoning it, except in certain instances—for example, excision of rectum, bladder surgery, etc.—in favour of regional and splanchnic anaesthesia in combination with a suitable amnesic, my favourite being avertin. This latter combination for upper abdominal work and pelvic work is a joy. It results in practically no shock to the patient, and teaches the surgeon the art of caressing the tissues to the most minute degree.—I am, etc.,

Bradford, Feb. 21st. BASIL HUGHES.

Treatment of Hallux Valgus and Rigidus

SIR,—This hardy perennial seems still to be a subject for discussion. I notice that at a recent meeting of the Medical Society of London my friend Mr. Blundell Bankart spoke strongly in favour of excision of the head of the first metatarsal bone as being unquestionably the best treatment. He also said that this operation was the only treatment for hallux rigidus. Undoubtedly the operation described is a very good one so far as relieving symptoms is concerned, but we hold very strongly in Leeds that the operation of removal of the proximal part of the first phalanx is superior. This leaves the same type of joint, but has the advantage of preserving the head of the metatarsal for weight-bearing, and for taking-off in walking or jumping. The osteophytic outgrowths from the metatarsal head are usually removed at the same time, though I believe Charters Symonds stated that these will disappear after removal of the base of the phalanx. One can conceive of an athlete or soldier resuming his activities after removal of the base of the phalanx, but not, I think, after removal of the metatarsal head. One would be slow in advising either operation in childhood, of course, as hallux rigidus, at least, may disappear with appropriate conservative treatment.—I am, etc.,

Leeds, Feb. 18th. S. W. DAW.

Diagnosis of Early Pulmonary Tuberculosis

SIR,—Dr. W. Burton Wood's paper on the above subject, published in your issue of February 16th (p. 294), represents a clear and forcible exposition of the diagnostic standpoints in early phthisis. We must all be aware of the difficulty in securing a definite diagnosis in the incipient stages, and of the commonly negative results from the classical formula, "inspection, palpation, percussion, and auscultation." I agree that radiology is hardly practicable in general practice, and would indicate that the same objection often applies to tuberculin tests and serum reactions.

Dr. Burton Wood's stressing the importance of repeated sputum examinations in doubtful cases is most laudable. My experience has so often confirmed the necessity. There is just one diagnostic point which he has omitted to mention, no doubt on the grounds that "ça va sans dire." I believe, however, that it should be ventilated while his details of diagnostic approach are still fresh in our memories. I refer to the careful use of an accurate clinical thermometer. All of us know that one of the first morbid signs following on the implantation of the tubercle bacillus is a fleeting elevation of body temperature, evoked by the combat between the defensive mechanism of the host and the bacillary invaders and their toxins. Accordingly, much might be learned by frequent thermometric observations over a period of, say, ten days, in a suspected case of early pulmonary tuberculosis. The instrument should be left in position for a sufficient length of time to ensure accuracy. The influence of exercise and rest on any elevation should be noted. If there is found, at some time of the day, an elevation of even one quarter to three-quarters of a degree above the normal for some days, we know that such a case should have the most careful consideration and constant observation, so as to endeavour to prevent it going on to be an "open" case of pulmonary tuberculosis. I write to remind readers of the value of this simple adjuvant to the diagnostic armamentarium.—I am, etc.,

Ballachulish, Feb. 20th. LACHLAN GRANT.

Maternal Mortality

SIR,—May I, as a young practitioner of only seven years' experience, express a few opinions on the matter of maternal mortality and its prevention, which is agitating both the medical and the lay press at the moment.

Much has been said about more expert training for the doctors—extended training, specialist service, and ante-natal and post-natal care. Since qualifying I have attended some forty to fifty cases a year, and what strikes me more than anything else is the appalling nature of the assistance available for both patient and doctor. My practice here is a large country one, and I am not exaggerating in saying that 70 per cent. of the cases I attend are in charge of a woman of the village, old or young, some with the experience of a few years, more or less, of attending maternity cases. Often it is a case of a woman who finds the fees useful as an adjunct to her husband's earnings as a labourer; frequently it is one who has never been to a confinement before but is "taking it up." The best will find the doctor some hot water, the majority have to be told that that is necessary. I have even had to kindle a fire in the small hours of the morning and get my own hot water. The confinement successfully over, as far as the doctor is concerned, the patient is left to the tender mercies of these women to be "cleaned up" and made comfortable. This attention is renewed daily. In busy times the doctor is called unnecessarily early and often. Certain areas have a

district nurse available, but in two or three of the parishes here (some of the largest in England) there is no nurse. Frequently one finds that the district nurse is not *persona grata* with a fair percentage of the cottage folk.

In our efforts to reduce maternal mortality the first and most obvious step seems to be to take measures to make the attendance of these "unclean" women illegal and punishable. Give the general practitioner a clean woman—preferably a licensed one—who will see that the patient, bed, and room are clean, and who knows the necessity of unlimited hot water and clean hands—one who knows a little of personal hygiene and how to wash a patient without spreading germs from everywhere over the site of the recent operation—and we shall have taken the first big step forward.

Not infrequently I have had a filthy woman of abysmal ignorance and ineptitude as helper, a cottage room bunged up with old furniture, clothes, and bric-à-brac, no hot water, a candle to work by, and in these surroundings have had to do a difficult forceps, first giving the anaesthetic, then hastily scrubbing up and performing the operation—with one eye on the patient, one on the job, and any spare glances to keep the "Gamp" from interfering. With all this one's results are almost uniformly good.

I don't believe the general practitioner is such a poor obstetrician. Perhaps I have been fortunate, but those I know could be trusted to deal with an emergency with promptness and decision in surroundings and conditions that would leave our hospital specialists speechless. By all means let us have our more efficient obstetrical specialists and highly trained midwives, but first give us, especially those of us in country general practice, just a little clean and efficient help. I think the results will surprise many.—I am, etc.,

Norfolk, Feb. 24th. E. CAMERON-MURPHY.

Surgical Masks

SIR,—Dr. R. K. Debenham's letter on surgical masks, in the *Journal* of Februray 23rd (p. 388), reminds me that I was once asked to test the efficiency of these. The method I adopted was to expose Petri dishes at about the level of a patient's abdomen when on the table, and let the surgeon and his assistant speak through their masks with their mouths at about the usual working distance from the plates. Quite a considerable number of colonies resulted in each case. As a control I and my assistant repeated the test without masks. To our surprise only one or two colonies appeared on our Petri dishes. It turned out that both I and my assistant were in the habit of cleaning our teeth after each meal, whereas the two surgeons cleaned theirs only night and morning. As we used only ordinary tooth pastes it would seem that sterilizing the mouth would give much better results than the use of masks. Curiously enough it was a Birmingham surgeon who asked for that test.—I am, etc.,

Falkirk, Feb. 25th. W. J. LOGIE.

"A Miracle of Healing"

SIR,—I think your readers will agree that the circumstances of the following case should be placed on record in a medical journal.

On February 15th I saw a young Greek lady, aged 19, at the request of Dr. A. P. Cawadias and Dr. G. E. Ellison. She had been to the gymnasium on the previous day for her usual exercises, and afterwards went downstairs and had coffee. While she was drinking it she suddenly found that she could not see, and she was led home. Half an hour later, at 10.30 p.m., she suddenly saw quite well, but at 11 o'clock the blindness started returning, and she was soon totally blind. Her mother had influenza a fortnight ago, and the girl had a sore throat and an illness which was probably of influenzal type a week later. There was practically no pain, though she doubtfully claimed to have had some the previous day. She was a well-nourished, well-developed girl, but obviously in a nervous state.

A careful examination showed no signs whatever of disease in the eyes. I gave her my arm, asked her to put a hand on my wrist and another on my elbow, and when I guided her in this way she followed me very rapidly into and about my dark-room. Patients who have long been blind can be led in this way and will move very quickly, but I have never known a patient recently blinded able to do this. It is, to my mind, a certain sign of long-continued blindness or else of useful sight. I thoroughly believe that she thought she was blind, but I am quite confident that she was seeing. When my secretary was bringing her upstairs she said to her, "Put your hand on the banisters." The girl unhesitatingly put out her left hand to the banister on that side. She did not grope with both hands or ask which side it was, as a blind person would have done.

I gave the opinion without the slightest hesitation, first of all to the mother and aunt, and later in consultation to Dr. Cawadias and Dr. Ellison, that the girl was suffering from hysterical amaurosis, and that she would recover her sight completely and probably suddenly. Yesterday I was informed by Dr. Cawadias that after two or three days' unsuccessful treatment by the doctor, "a Greek priest was called in at the mother's suggestion. *He read a prayer of exorcism of the devil!* After the exorcism she had a violent attack of convulsions, was put to bed, and after a few minutes threw off the blankets, screaming 'I see! I see!' Since then she has been normal. . . . The result is that the Greek priest in his triumph has challenged the faith of Dr. Ellison and myself in exorcism of the devil, and another cure of blindness has been added to the miracles of faith-healing!"

That such claims can continue to be made in the twentieth century is little short of astounding. The case was a typical one of hysterical amaurosis following influenza, and the patient was bound to recover, probably suddenly, before very long. Doubtless the strong suggestion associated with the priest's action sufficed to restore her confidence in her power of seeing. Meantime it is being bruited in the Press as a miracle.—I am, etc.,

London, W.1, Feb. 21st. R. H. ELLIOT, M.D., F.R.C.S.

High Blood Urea

SIR,—I read Dr. D. E. Dunnill's account of a case of abnormally high blood urea in the *Journal* of January 26th (p. 154).

A blood urea of 350 mg. is, of course, very high, but, in my experience at least, is not rare; nor are higher values rare. Among our records of over 50,000 blood urea estimations there are about 150 such cases. The finding, however, of such high urea values in chronic nephritis *with no symptoms of uraemia* is very rare. I note that Dr. Dunnill's patient was not entirely free of symptoms: there was drowsiness, nausea, and indigestion when the blood urea was higher than 350 mg.; and later, though this woman was able to go to a cinema two evenings in succession, she still complained of "a certain amount of nausea." A finding which, I believe, is also worthy of record, therefore, is the patient with no symptoms whatever.

One of our recent cases was that of a man, aged 55 years, who felt perfectly well and who, at his own request, was admitted to hospital for two or three days' observation because he was contemplating a long trip from home. As I stated, this man felt perfectly well; there was no nausea, no headache, no disturbance of vision, nor any other subjective sign suggestive of uraemia. There was marked hypertension, but of this he was not aware. He died two months later of uraemia.

Another case is that of a man who was admitted to the urological service of this hospital, and who, apart from the local (kidney) disturbance, was apparently well; there were no complaints suggestive of uraemia. He died of uraemia one month later. A number of examinations were made in both of these cases, and the blood ureas were never less than 350 mg. per 100 c.cm. In both cases there were no subjective signs until a few days before death; in the first case intense headache was the first sign of uraemia three days before death; and in the second case the drowsiness which developed eight days before death was the first sign. Such cases are very rare.

There is a type of patient in whom absence of signs of uraemia is fairly common in spite of very high blood urea values—namely, mechanical obstruction to the outflow of urine (prostatic hypertrophy, etc.). The absence of signs of uraemia in spite of marked retention of urea is at times most striking. The prognosis in such cases is different from that in chronic nephritis; with relief of the obstruction the blood urea generally returns to the normal level. These patients also differ from those with chronic nephritis in that, in spite of the high urea, the creatinine content of the blood is usually normal, or nearly so, and Andrewes's diazo-reaction for urea is negative. (See "A Study of the Urea and Creatinine Contents of Blood in Renal Disease," by Patch, F. S., and Rabinowitch, I. M., *Journ. Amer. Med. Assoc.*, 1928, xc, 1092.) Incidentally, these cases afford very good proof that the signs and symptoms of uraemia are not due to excess quantities of urea in the blood.—I am, etc.,

I. M. RABINOWITCH.

Department of Metabolism, The Montreal General Hospital, Montreal, Canada, Feb. 6th.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

Sir Daniel Hall, F.R.S., will deliver the Rede Lecture, on "The Pace of Progress," at 5 p.m., on Monday, March 4th, in the Senate House. Sir John Russell, F.R.S., will deliver the Henry Sidgwick Memorial Lecture, on "The Impact of Science on the National Life," at 5 p.m., on Saturday, March 9th, in the Hall of Newnham College.

Dr. Borradaile has been appointed a member of the Faculty Board of Medicine until December 31st, 1936.

UNIVERSITY OF LONDON

The Senate, at its meeting on February 21st, approved a proposal to hold external examinations of the University in New York. This proposal, which is an entirely new departure in the history of the University, was submitted by the American Ambassador and the British Foreign Office to the State Department in New York, which has given its formal sanction. These examinations are to be available for both British subjects and students of other nationalities.

UNIVERSITY OF BRISTOL

FACULTY OF MEDICINE

Owing to the pressure on the accommodation for the preclinical subjects, the University is obliged to restrict the entry of candidates to this Faculty for the session 1935-6 to those undertaking to read for Bristol degrees in medicine or dentistry or the Bristol diploma in dentistry. Those wishing to secure a vacancy for October, 1935, should make application to the registrar without delay.

INTER-COLLEGIATE SCHOLARSHIPS BOARD

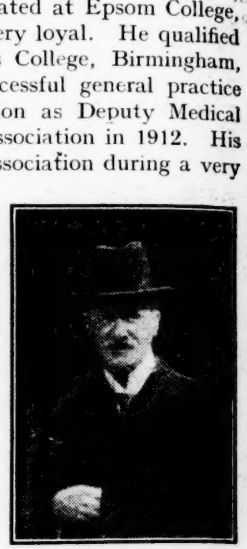
The London Inter-Collegiate Scholarships Board announces that an examination for fourteen medical scholarships and exhibitions, of an aggregate total value of £2,138, will commence on May 13th. They are tenable at University College and University College Hospital Medical School, King's College and King's College Hospital Medical School, the London (Royal Free Hospital) School of Medicine for Women, and the London Hospital Medical College. Full particulars and entry form may be obtained from the secretary of the Board, Mr. S. C. Ranner, M.A., the Medical School, King's College Hospital, Denmark Hill, S.E.5.

Obituary

JAMES NEAL, M.R.C.S., L.R.C.P.

General Secretary of the Medical Defence Union

After a very few days' illness Dr. James Neal died quite suddenly and unexpectedly on the morning of February 24th, at his home in Golder's Green, N.W. He was in his sixty-ninth year, and was educated at Epsom College, to whose interests he was always very loyal. He qualified M.R.C.S., L.R.C.P. from Queen's College, Birmingham, in 1891. After several years' successful general practice in Birmingham he came to London as Deputy Medical Secretary of the British Medical Association in 1912. His work at the headquarters of the Association during a very difficult period, which included the war years, won him the esteem and affection of his colleagues and of all with whom his duties brought him into touch. In 1919 the sudden death of Dr. A. G. Bateman deprived the Medical Defence Union of its principal officer, who had been associated with it from its foundation in 1885, and Neal was unanimously invited by the council of that body to step into the vacant post as general secretary of the Union. In this capacity he more than maintained the traditions of his predecessor, and his ability, tact, and courtesy very soon satisfied the council of the Defence Union that it had got the right man for the post.



With the possible exceptions of Dr. Cox and Dr. Anderson there can scarcely be a member of our profession who has been brought into intimate contact with so many of his colleagues as Dr. Neal had been from 1919 onwards. He was in many ways the ideal secretary—always industrious and painstaking, always conciliatory, always transparently honest, and always intelligent and alert. Everyone who consulted him felt that Neal was not merely doing his best to forward the interests of the member concerned, but that his advice was based upon a wide experience, and dictated by a sagacity possibly unique in the profession. He was seldom given to lightning decisions; he preferred to master every detail of a case before concluding on the right line of action, and once he had made up his mind it was very difficult to turn him from what he thought was the right course to adopt. He was exceedingly skilful in the art of managing his council, always careful not to appear to be driving or dictating to it; he was almost always successful in getting it to confirm his point of view. He had a clear conception of his own limitations—for example, he never in any circumstances took part in discussions upon financial policy, for he realized that this was a topic better for him to leave alone. He knew instinctively at what point in the handling of a difficulty it became ripe for a lawyer, and was most conscientious in handing over matters requiring expert legal advice to the Union's solicitor at exactly the right stage in the development of the case.

He was a very likeable man, who never let his strong personality get the better of his sense of politeness. There is no doubt that his great popularity and the widespread trust and confidence which members of the Medical Defence Union entertained for him were of the utmost value to that organization, which grew enormously, both in numbers and in prosperity, during his regime.

Dr. Neal was elected a member of the British Medical Association in 1902, and was always a most enthusiastic

and loyal member of the Association. He was honorary secretary of the Section of Medical Sociology at the Birmingham meeting in 1911, Representative in 1910–11, 1925, 1926, 1927, and 1928; chairman of the Hendon Division, 1927–9; a member of the Ethical Committee in 1919, 1926, 1927, and 1931–5; a member of the Special Pathological Committee, 1925–6, and of the Pathological Committee, 1926–7; and member of the Joint Subcommittee of the Central Ethical and Science Committees, 1930–1. He married Helen, daughter of E. L. Tyndall and a descendant of the Protestant reformer and martyr.

Dr. ALFRED COX writes:

The sudden death of James Neal is a great blow. The last time I saw him he told me that he had found he had to take things a little easier, but he gave me no indication of anything serious. To the Medical Defence Union his loss will be a grievous one. I shall always remember him chiefly as the able and devoted Deputy Medical Secretary of the B.M.A., and as one of the pillars of our Central Ethical Committee. He came to the staff of the Association at a very critical and difficult time, when the Association was in the midst of the reaction after the great fight over national health insurance. He had previously served a long apprenticeship in local medical politics in Birmingham, where his steadiness, good judgement, and ability to state a case clearly and effectively were well known and appreciated. Birmingham sent him to the Representative Meeting, and there he made a deep impression, so that it was a great satisfaction to many, and not least to myself, when in 1912 he offered himself as a candidate for the post of Deputy Medical Secretary. None of us had any doubts that he was the right man, and during the years he filled that position he did it with the utmost credit to himself and to the Association. I can never forget what a comfort he was to me at a time when the medico-political atmosphere was anything but a happy one. Statesmanship and careful handling were necessary to restore confidence in the leadership of the Association, whose position had been somewhat shaken by the events at the end of 1912. In this difficult period Neal did yeoman service. As Deputy Medical Secretary he increased his circle of friends and his sphere of usefulness and influence. The work on the staff in which he took special interest was the secretaryship of the Central Ethical Committee, for which his gifts of caution, judgement, and moderation made him peculiarly suitable. So, though we greatly regretted his loss when he left the Association to became secretary of the Medical Defence Union, we felt that it was exactly the kind of work for which he was best fitted. Others can speak better than I can as to his work for the Union, but no one knows better than I do how he used his experience in his new post to make him even more useful and valuable to our Central Ethical Committee. Many a time have I been grateful for his knowledge and wise advice. Neal was never a man who cared much for the limelight, but there are few men of his generation who have left a finer record of service for the profession.

The following well-known foreign medical men have recently died: Dr. J. M. ESCALIER, ex-president of the Argentine Medical Association, aged 70; Dr. J. M. ZUBIZARRETA, ex-director of public welfare at Buenos Aires; Dr. ERNESTO ROMAGOSA, professor of clinical surgery of the Córdoba Faculty of Medicine, ex-dean of the Faculty, and ex-rector of the University; Dr. CYRIACO ESTEBAN, an eminent gynaecologist of Seville; Professor HANS LORENZ, an eminent surgeon of Vienna, aged 61; Dr. GAUTIER, a Paris oto-rhino-laryngologist, commander of the Legion of Honour; and Dr. G. MEILLÈRE, ex-president of the Académie de Médecine, officer of the Legion of Honour, aged 74.

Medico-Legal

PUERPERAL SEPSIS IN A MUNICIPAL MATERNITY HOME

Marshall v. Lindsey County Council

The Court of Appeal gave judgement on February 8th in a case of first-rate importance to hospital officers and local authorities. In view of the possibility of an appeal to the House of Lords comment on the case would be improper at this stage.

The Lindsey County Council, in Lincolnshire, are the proprietors of certain maternity homes, all of which are under the general supervision of the county medical officer, Dr. Campbell. Of one of these, the Cleethorpes Maternity Home, the assistant county medical officer, Dr. W. B. Stott, is medical superintendent. Both visit the home from time to time, but neither performs any clinical duties at it, patients being treated by their own doctors or by others appointed from a special panel. Dr. Campbell and Dr. Stott had authority in an emergency to close the home or take any necessary measures to make it hygienically safe. At the beginning of 1933, Mrs. Marshall, the plaintiff in the present action, called at the home, saw the matron, and booked a private ward at four guineas a week for July 4th. She did not come again until July 12th, when she was on the point of labour. Meanwhile, on June 30th, a Mrs. Franklin entered the home and was placed in Ward 7, in use as a receiving ward. She was delivered in the labour ward by a Nurse Siddle in the morning of July 1st, and was then taken back to Ward 7. On July 2nd she was taken to the Gray Ward, where there were two other patients, Mrs. C. and Mrs. T., and was attended by Nurse Siddle. On July 3rd her temperature rose to over 100.4° F., and she was accordingly notified as a case of puerperal pyrexia. On July 4th her temperature went to 105° F.; a local doctor diagnosed appendicitis and sent her to Grimsby General Hospital, where puerperal sepsis was diagnosed. The matron of the home immediately ordered all the nurses to take lysol baths and appropriate gargles; Mrs. C. and Mrs. T. were moved from the Gray Ward to No. 7, and the Gray Ward was closed, disinfected, and washed. The bedding could not be disinfected at the time, but was taken away on the 10th, the room meanwhile remaining closed but not sealed. The theatre was also disinfected. On the morning of July 5th Dr. Stott heard of and approved the steps which had been taken. Nurse Siddle was released from duty for two days.

On July 9th a Mrs. Fleming was admitted, was delivered in the evening, and sent back to the Oak Ward. On the 10th and 11th she showed temperatures and was notified; she did not become very ill, but *Streptococcus pyogenes*, type Glover, was recovered from the genital tract. On July 12th four other patients came in, of whom three were delivered and all were attended by Nurse Siddle.

On the 12th Mrs. Marshall—the plaintiff—and her husband arrived late in the evening, after telephoning and being informed that everything was all right and she could come in. They were told by Nurse Siddle that no private ward was available and that she would have to go for a time into a ward with other patients. After some hesitation she and her husband decided that she would enter the home on the understanding that she should be removed to a private ward as soon as possible. Nothing was said about the case of puerperal sepsis. Mrs. Marshall was taken to Ward No. 7, and, after her delivery in the labour ward by the assistant of her family doctor, she was placed in the same ward as Mrs. T. and one of the four patients who had entered on the 12th. On the 16th all those four developed a temperature and were sent to the Fever Hospital. Mrs. Marshall developed a temperature on the 17th, and was not sent to the hospital until a few days afterwards. She had a bad attack of puerperal sepsis, and sued the Lindsey County Council for breach of contract and negligence.

Mr. Justice Lawrence tried the action at Lincoln Assizes with a special jury, and Mrs. Marshall was awarded £750 damages. The jury, in answer to a series of questions, found as follows: "That the contract to supply a private room had not been subject to a condition that there should be a

room available ; that the contract had been to supply a private room when she should present herself, and not specifically on July 4th ; that the contract was not varied by her agreeing to enter the public ward ; that the defendants (through their servants or agents, the matron and staff) had committed a breach of duty by not refusing admission to new patients from July 5th onwards ; that they had committed a breach of duty because swabs were not taken from the whole of the staff immediately on the report that Mrs. Franklin had puerperal sepsis ; that they had committed a breach of duty in not informing the plaintiff, her husband, or her medical advisers of Mrs. Franklin's case ; and that the plaintiff's illness flowed from these three breaches of duty. The Lindsey County Council appealed on the ground that there was no evidence to support the findings of the jury, and alternatively asked for a new trial on the ground that the verdict was against the weight of the evidence and the damages were excessive.

A MAJORITY AGAINST THE COUNCIL

The Court of Appeal upheld the award by a majority decision, Lord Justice Greer—the judge presiding—and Lord Justice Roche being in favour of dismissing the appeal and Lord Justice Maugham dissenting from them. The Court unanimously considered the jury wrong in finding that there was a contract to give the plaintiff a room whenever she presented herself ; and also considered that, as she knew that there was no private ward available for her, she must be deemed to have entered into a new contract to accept a position in a public ward until a private ward was ready. Moreover, all three judges agreed that, whether Dr. Campbell and Dr. Stott had committed any negligence or not, the County Council could not be held responsible for their actions, as they were independent skilled advisers, and that therefore Mrs. Marshall could not recover damages because the home had not been closed or because swabs had not been taken from the whole of the staff at once. Where Lord Justice Maugham dissented was on the question of whether the staff of the home committed a breach of duty in not informing Mrs. Marshall, her husband, or her doctors of Mrs. Franklin's case ; and whether, if a breach of duty had been committed in this respect, the County Council was responsible for the action of the staff.

Lord Justice Greer said that it was admitted that Mrs. Marshall caught the disease in the home, and the weight of evidence showed that all the five patients were infected from a common source, which could only have been Mrs. Franklin, and that the efforts at disinfection had failed. The matron knew what disinfection had been done ; she suspected at one time that Mrs. Fleming's case raised a doubt whether the disinfection had been successful in eliminating the infective germs ; she knew that the home was unusually full and that the only accommodation available for Mrs. Marshall was Ward No. 7, in which Mrs. Franklin had been and which had never been disinfected. He therefore found that there was evidence on which the jury could hold that the matron was negligent in admitting Mrs. Marshall on the night of the 12th, when she knew, or ought to have known, that there was grave risk of danger. On the question of the responsibility of the County Council for the matron's acts, he thought that the terms on which patients were invited into the home were matters of administration which were left to be carried out by the matron and those acting under her, and that their negligence was the negligence of servants of the defendants acting within the scope of their authority.

Lord Justice Roche considered that, as the maternity home was in fact only a house, comparison with much larger institutions and with their practice was not really useful. The jury were entitled to consider, he thought, what is the normal practice of ordinary people using common sense and common prudence towards invitees or guests, paying or otherwise, who propose to enter and stay in their homes when infectious disease has recently occurred. The duty of the defendants, acting through the matron, did not differ from the position of an ordinary householder, and in particular the duty to warn a proposed entrant or her representative of a danger which was, or ought to have been, known to the matron. The proper course was communication to the doctor or husband, the earlier before the admission the better. Mrs. Marshall could then have been confined in her own home and attended by her doctor. The obligation to give warning was, he thought, the direct responsibility of the defendant Council and their servant the matron. This was not a clinical matter, but part and parcel of the management of a home, and was bound up with the making and keeping of the contract between Mrs. Marshall and the County Council. According to the evidence, if Mrs. Marshall or her doctor had been warned, she would not have entered the home.

THE DISSENTING JUDGEMENT

Lord Justice Maugham, in his dissenting judgement, argued that the whole technique of disinfection and sterilization adopted in the home was one approved by Dr. Stott and Dr. Campbell. There was no evidence that it was negligent of the County Council to rely on a technique approved by them. Moreover, the practice of the home in not refusing fresh patients after a single case of puerperal sepsis was in accordance with the universal practice of maternity homes and hospitals throughout England. The Ministry had never proposed the drastic step which the jury appeared in favour. He thought that the Council—assuming their responsibility for the acts of the medical officer and nursing staff—had acted in accordance with the recognized practice, and were therefore free from liability on the ground of negligence. An act could not be held due to want of reasonable care if it was in accordance with the general practice of mankind. On the question of whether the matron or a nurse ought to have warned Mrs. Marshall, he entirely differed from his brother judges. No medical witness on either side, he said, thought that the warning should have been given to the plaintiff herself. To warn the husband would have placed him in a cruel dilemma. There was no evidence that at that time of night she could have gone to another home or maternity hospital, or that, if her husband found her a bed elsewhere after a night journey, she would there have been more safely placed. The evidence showed that it was not the practice of any maternity home in England to tell patients or their friends anything about recent cases of puerperal sepsis or pyexia. It was said that the patient's doctor should be told, but it could not be right for him to act without informing the patient or her husband if he thought there was an appreciable risk. There would be nothing alarming in this view if there were a week or so in hand, but in the present circumstances the step seemed to have been practically impossible. The hour was midnight, the lady's doctor was apparently away, there was the difficulty of getting a bed elsewhere, and there was the serious objection of keeping the expectant mother waiting while telephonic or other communications were being made with her doctor and efforts were being made to find some other suitable home. He concluded that the usual practice of maternity homes and hospitals on this question of warning was founded on good sense, and that having regard to this practice it was not open to the jury—particularly in the special circumstances—to find that the absence of warning constituted negligence. The partner of Mrs. Marshall's doctor, who was called as a witness, had said that, if he had been informed of the facts, he would still have permitted her to enter the home.

On the question of whether the County Council undertook any duty to a patient beyond that of providing a building and appliances suitable for the purposes of such an institution, and the attendance of duly qualified persons therein, the County Council, he considered, had no duty or even power to insist on any line of treatment or any method of disinfection of the home. Nor was there evidence that the question of whether a patient should be warned of infection was one to be decided by the County Council or some subcommittee or agent appointed by them. Such a matter impinged so closely on the matter of treatment after admission and of discharge from the home after confinement that it was inseparable from those questions ; he could not agree that it was a matter of administration left to be carried out by the matron irrespective of the directions of the medical officers. The need for a warning, and the question of whether more harm than good might not result from a warning given to an agitated woman or her husband, were matters to be

weighed in the light of expert knowledge and experience. Nor did he think that any useful rule could be framed by the defendants for the guidance of the matron with expert assistance (a test suggested in one of the leading cases for the responsibility of a governing body). If the independent medical advisers, having taken the necessary precautions, did not think it expedient to close the home to fresh patients and did not require any warning to be given, the authorities were free from responsibility. Moreover, if the medical adviser of the patient was not disposed to trust the maternity home and those who managed it, he should make his own inquiries.

Quoting from the leading cases of Hall *v.* Lees (1904), Evans *v.* Liverpool Corporation (1906), and Hillyer *v.* St. Bartholomew's Hospital (1909), Lord Justice Maugham expressed the opinion that the contract of the County Council with Mrs. Marshall imposed on them only the limited duty of providing a home with proper equipment, expert staff, and competent medical supervision. They were not in the circumstances liable for the negligence of these persons or any of them. He also entertained the greatest doubt whether there was evidence before the jury from which they could properly find that the plaintiff contracted puerperal fever directly or indirectly from Mrs. Franklin, and unless this was so he had difficulty in seeing how the damage could be said to flow from the alleged want of care in not warning the plaintiff or her representatives as regards Mrs. Franklin. The period of incubation was accepted as twenty-four to forty-eight hours; Mrs. Franklin left the home eight days before the plaintiff entered it, and the four cases which developed on July 16th developed at practically the same time. These facts suggested that the outbreak on the 16th was not due to contagion from Mrs. Franklin, but to some other source, such as the existence of a carrier in the home or its introduction from outside—for example, by Mrs. Fleming. No witness for the plaintiff had pledged his opinion that the disease was contracted indirectly from Mrs. Franklin, while a number of witnesses for the defendants expressed the opinion that it had nothing to do with her. Concerning the finding that the defendant had been negligent because swabs had not been taken from the whole of the staff, Lord Justice Maugham said that although the Ministry of Health had published some regulations in April, 1934, recommending the taking of swabs in such a case, no such regulations had been in force in July, 1933, and the mere absence of a precaution which later experience had suggested as wise could not constitute negligence at the earlier date. There was no evidence that if swabs had been taken they would have disclosed that one of the staff was a carrier. There was no evidence to show that the technique of the home with regard to the taking of swabs according to the expert opinion at the time was in any way defective; that technique was, moreover, a matter for the medical officers, for whom the defendants were not liable. Gynaecologists differed very greatly on the prevention of puerperal sepsis, and it was not open to a jury to hold that it was negligent to accept one view rather than the other.

It had also been sought to justify the verdict on the well-known principle that the occupier of premises owed an invitee a duty to use care to make them reasonably safe, or to give him due warning of the existence of hidden danger. The jury did not give any finding on the question whether the matron thought, when admitting the plaintiff, that there was any hidden danger, but there was, in his opinion, no evidence on which the jury could come to such a conclusion. Moreover, even if there had been a hidden danger known to the matron, she was bound to act in such a matter as Dr. Stott directed, and since the doctor was not a servant of the defendants his Lordship could not see how the defendants could be under a liability. His judgement would be for allowing the appeal and dismissing the action, but, as his brethren had come to a contrary conclusion, the result would be otherwise.

Mr. E. W. Cave, K.C., who led for the County Council, asked leave to appeal to the House of Lords, if and when the defendants were so advised. Leave was given, on condition that the County Council should not ask for costs on the appeal to the House of Lords if they succeeded.

Medical Notes in Parliament

[FROM OUR PARLIAMENTARY CORRESPONDENT]

In the House of Commons, on February 21st, the Housing (Scotland) Bill was read a second time.

On February 22nd the Unemployment Insurance Bill was read a second time, and on February 25th it passed its remaining stages, the Royal assent being given in the House of Lords on February 26th.

The House of Commons, on February 22nd, gave third readings to the County of Holland Joint Hospital District Bill, the Huntingdonshire Joint Hospital District Bill, and the South Chilterns Joint Small-pox Hospital District Bill.

The Guisborough Joint Small-pox Hospital District Bill was read a third time in the House of Commons on February 25th.

In the House of Lords, on February 21st, the Intoxicating Liquor (Advertisement Regulation) Bill was read a first time, and on February 26th the Regimental Charitable Funds Bill was considered on report.

Diphtheria in Immunized Children

Replying to Mr. Groves on February 20th, Sir HILTON YOUNG said he could not state the method by which fever hospital doctors compiled their records respecting cases of diphtheria in immunized and unimmunized children, as it was a matter for determination by the local authority concerned. He did not receive information from medical officers of health regarding fatal cases of diphtheria in immunized children.

On February 25th Sir Hilton Young told Mr. Groves that the following particulars had been supplied by the Birmingham local authority with regard to cases of diphtheria in completely immunized children. In 1932 there were two cases, and the length of time which had elapsed since complete inoculation was seven months and one year eleven months respectively. In 1933 there were three cases, the periods being two years eight months, four years one month, and six years one month respectively. In 1934 there were eight cases, the periods being one year, one year seven months, nine months, two years seven months, three and a half years, two and three-quarter years, one year seven months, and three years four months. With regard to cases of diphtheria in children not completely immunized, in 1932 there was one case, the length of time which had elapsed since inoculation being three months. In 1933 there were three cases, the period being four days, two years, and one year five months respectively. In 1934 there was one case, the period being two weeks.

Answering Mr. Groves on February 18th, Sir Hilton Young said that the information furnished by the Dewsbury local authority showed that twenty-six cases of diphtheria occurred in children under 15 who had received inoculation intended to be protective against diphtheria in 1933, and twenty-seven in 1934. Of the twenty-six cases in 1933, two patients died, and of the twenty-seven in 1934, five died. All these were inoculated in 1932 and 1933, but were not proved to be immune by the Schick test. No children who had been proved to be immune by the Schick test had developed diphtheria during the period mentioned.

Water Supply for London

In the House of Commons, on February 18th, the Metropolitan Water Board Bill was read a second time. Sir A. BOYD-CARPENTER then moved that it should be an instruction to the committee which would consider the Bill to delete the proposals which involved the erection of a reservoir on the site occupied by the Holly Lodge Experimental Farm at Walton-on-Thames. He said that this was one of the most remarkable research farms in the country, and its work had met with the approval of great scientific societies, such as the Royal Society, the Geological Society, and the Scientific Development Society.

Mr. GARDNER stated that storage was part of the purification process of the Metropolitan Water Board. It was proved by the late Sir Alexander Houston that river water, impregnated as it was sometimes with the typhoid germ, could be purified, so far as that part of the bacteria content was concerned, by storage. He discovered that fact by research, and that fact decided Parliament to allow the water supply of London to be drawn from the Thames. Therefore, if it was part of the purification, it was necessary to have it near the intake and the plant that dealt with purification, so that the process might be as cheap as possible. The need of further storage had been admitted, and the Bill should be sent to the committee for the consideration it ought to receive.

Dr. O'DONOVAN said that the House would be very ill advised to take up an attitude of criticism of, and judgement on, the Metropolitan Water Board, which had served London so well. The Board had brought Londoners up on Thames and Lea water, and the purification of this river water had been a lifetime's study for the skilled officers of the Board. With the skill they had acquired in the study of the problem they had preserved millions of Londoners from epidemics. The suggestion that the Board's officers should be cut off from utilizing a supply of river water whose management and purification they understood so well, and should be told to look elsewhere, was a menace to the health of Londoners, which responsibility the competent officers of the Board would not like to take over. He asked the House to say that the Board should not have a public rebuff while it was preserving the amenities and health of London.

Sir HILTON YOUNG replied that he had consulted the Minister of Agriculture, who was very much concerned with the interests of such institutions as the farm in question, with all its importance to agricultural research. The Minister agreed that the appropriate and most thorough way to consider those interests and their co-ordination with the public interest of water supply would be to refer the matter to a committee of the House. In that he (Sir Hilton Young) agreed.

The motion was withdrawn.

Housing in Scotland

In the House of Commons, on February 21st, Sir GODFREY COLLINS moved the second reading of the Housing (Scotland) Bill. He said that since the war 183,000 houses had been provided in Scotland with State assistance, giving new accommodation for approximately 850,000 persons, or nearly one-fifth of the total population. Yet the great mass of the poorer classes continued without decent houses. Slums and crowded tenements existed at the heart of nearly every town and village. A year ago the Government started a campaign to destroy the slums of Scotland in five years. In twelve months contracts had been placed to destroy forty out of every 100 slum houses. They intended to destroy 60,000 slum houses, and within five years all the slum property in Scotland would be a thing of the past. The present slum clearance subsidy would remain undiminished until March 31st, 1938. The present Bill laid down a standard of overcrowding. Common sense must determine when the standard could be fully enforced. The Government recognized there were special difficulties in applying the standard in parts of Scotland, especially to the housing accommodation of farm servants. Clause 4 would provide, after the appointed day, a breathing space to consider methods for dealing with special difficulties. In Glasgow at Whitsun, 1934, the proportion of houses of three apartments and under which were unlet was 0.5 per cent. In such small houses the mass of overcrowding existed. More than 1,638,000 persons—over one-third of the population—were living more than two to a room, and nearly 750,000 more than three to a room. The Government did not propose to rehouse any great proportion of overcrowded families in tenements at the centres of the towns. They must rehouse large numbers on the outskirts. The problem differed from that in England, and the financial basis of assistance for rehousing must differ. The Bill proposed an Exchequer subsidy of £6 15s. a year for forty years, which would enable local authorities to build modern houses at rents within the reach of the low-wage earner. In far-distant parts of Scotland, mainly in the Highlands and Islands, when need was proved, the extra burden would be borne by the State. Local authorities would have power to arrange with housing associations for the erection of working-class accommodation which would abate overcrowding or replace slums. Improvement of accommodation for rural workers must be pressed on, and the assistance under the Housing (Rural Workers) Act, 1926, would be extended to applications received up to June 24th, 1938. Generally no Exchequer subsidy would be paid for houses of less than three apartments. It was not intended to establish a new standard for existing houses. The unfitness of each house must be judged on its merits.

Mr. NEIL MACLEAN, on behalf of the Labour Opposition, moved a reasoned amendment for the rejection of the Bill. He hoped the Bill would be largely altered in Standing Committee to incorporate the good points of the Housing Acts of 1924 and 1930, which had largely been allowed to drop. Sir ARCHIBALD SINCLAIR said the Bill was better than the English Housing Bill, and better adapted to Scottish conditions. The progress proposed to be made under it—27,500 houses in the first three years—was too slow, and the standard of overcrowding seemed fanciful beside the fact that in 1931 7 per cent. of the population of Scotland lived in one-roomed houses and 37 per cent. in two-roomed houses. Sir ROBERT HORNE said he had heard of an unemployed man with a family of fifteen. What accommodation would he require under this scheme? The overcrowding standard laid down in the Bill would strike at conditions which to-day were normal and decent, and would convert 60,000 or 70,000 houses in Glasgow into legally overcrowded houses. It would no longer be permissible to let these to tenants. How quickly was Glasgow going to supply a deficiency of 60,000 or 70,000 houses? Mr. MCGOVERN said a Commission in Glasgow had decided that 136,000 houses were needed in Glasgow alone. Mr. SHAW said that for the working man and wife the task of keeping a large house clean and attending to a large young family was impossible. A small house kept scrupulously clean was more desirable. It was fantastic nonsense to say the wife of a working man must put an infant of twelve months into a room by itself or into a room with other young children. There was also the question of annual holidays. In the past the landlady on the Clyde had made her living out of overcrowding. Mr. BURNETT stated that in Aberdeen, of families on the list of applicants for Council houses, fifty-eight consisted of nine or more persons, and of these fifty-six were overcrowded. The House should deal with overcrowding from the top, and not start with a standard of two adults and one child in a room. Miss HORSBRUGH hoped the Bill would be framed in committee to ensure that the worst cases of overcrowding were dealt with first. She hoped to see in Scotland flats put up of the best type, with balconies and with playgrounds for the children.

Mr. SKELTON, replying for the Government, said that when the housing of the population had been readjusted to its needs, there would be considerable demand for two-roomed houses. The decline in the size of families would continue. Moreover, families grew up.

On a division the House agreed to the second reading of the Bill by 118 to 30, and it was sent to a Standing Committee.

Unemployed without Insurance Rights

Sir HILTON YOUNG told Mr. Summersby, on February 21st, that approximately 170,000 formerly insured persons had now lapsed from health insurance by reason of continued unemployment. He had no figures showing how many of these persons had, in fact, found it necessary to apply to the public assistance authorities for medical attention, but such information as was available suggested that the number was not large.

Answering a question on the same subject, on February 25th, Mr. SHAKESPEARE told Mr. Mainwaring that the number of persons in Great Britain who came within the special provisions of Section 3 (5A) of the National Health Insurance Act, 1924, as amended by the Act of 1932, was estimated at 170,000, but the Minister was not able to give separate figures for particular areas. These persons were not entitled to cash benefits, but could regain title to such benefits on favourable terms by returning to employment or by becoming voluntary contributors. Every week many persons who had fallen under the special provisions of Section 3 (5A) returned to the ordinary provisions of the Acts, but no exact figures of the number of such persons were available. From 1933 to the end of 1935 the only people who could lose all insurance

rights by reason of unemployment were persons who, before they became unemployed, had been insured for less than four years, or had paid fewer than 160 contributions.

Durham University: Royal Commission's Report

The report of the Royal Commission on the University of Durham was laid on the table of the House of Commons on February 22nd. The Commission recommends the establishment of a court and senate for the university, and of a commissioner to draw up new statutes. It also proposes the amalgamation of the College of Medicine, Newcastle, and the Armstrong College as one division of the university, to be called "University College, Newcastle," the colleges at Durham to form a second division. Each division is to have its own governing body and permanent head. A special board is suggested to supervise the erection of the new medical buildings in Newcastle.

Foot-and-Mouth Disease Research: Additional Grant

On February 25th the House of Commons considered a Supplementary Estimate for £73,000 for salaries and expenses of the Ministry of Agriculture and Fisheries, including grants-in-aid in respect of agricultural education and research, eradication of diseases of animals, and fishery research. Mr. ELLIOT said the estimate provided for a net additional provision of £73,000, which had been rendered necessary owing to a recrudescence of foot-and-mouth disease. The original provision of £35,000 for foot-and-mouth disease was a scheduled figure, which was provided each year in respect of this service. Any substantial recrudescence of the disease in any year involved expenditure largely in excess of the amount, and £120,000 was included in the Supplementary Estimate for that purpose. During single financial years in the past expenditure had varied from some £19,000 to a sum, on one occasion, of over three millions. The position of foot-and-mouth disease was still obscure. All they could do was to watch most carefully and stamp it out most rigorously whenever it appeared; and to carry on research to discover, if they could, the fundamental causes.

Dr. ADDISON, in moving a reduction of the vote by £100, said it was a disgrace that there should be savings in agricultural research and education. There was one disease alone for which £120,000 had to be paid. No less than £3,000,000 a year had been lost through disease in the egg and poultry section of the agricultural industry, and yet there was only one research worker in this field at the Ministry's institution at Weybridge. The cause of this was the paralysing hand of the Chancellor of the Exchequer, as a result of which they had to go on paying thousands of pounds in compensation for the burning of animals. The motion for reduction was negatived and the vote agreed to.

Restoration of Civil Service "Cuts"

On February 25th the House of Commons considered a Supplementary Estimate for £100,000 in respect of the restoration of half the emergency reductions in Ministerial salaries and civil service remuneration, and the arrangements for consolidating the salaries of civil servants. Mr. DUFF COOPER, referring to the recommendation that the civil service bonus sliding scale in accordance with the cost of living should be exchanged for a permanent one, which should be based on a cost-of-living figure of 55, recalled that in September, 1931, there was a fall in the cost-of-living figure from 55 to 50. In the normal course remuneration would have been reduced accordingly. That was actually done, but not in the usual way, but as a special cut based on the economic needs of the time. It was being restored now in the same way as other cuts were being restored. The new arrangement had given general satisfaction. It conferred real benefits on the civil service, as was shown by the fact that in the full year it cost the country £1,200,000. If the old sliding scale were in operation remuneration would be based on a cost-of-living figure of 42, compared with 55. It was obviously a great improvement on the old system from the point of view of the civil service. Anyone who conceived himself to be suffering from a hardship could bring his case before the industrial council in the ordinary way. A surprisingly large number of cases had been dealt with in this manner, and a great many had been settled entirely satisfactorily to the persons concerned.

Sir ERNEST GRAHAM-LITTLE said that the 1920 agreement was accepted by both sides of the Whitley Council as a temporary and not a permanent arrangement. It was extremely disappointing to those in the civil service that during the interval between 1920 and 1931 the opportunity had not been taken to reach agreement. The Government was now imposing a settlement by administrative action, instead of by agreement. It was clear to anyone that there was dissatisfaction inside the service, and it was thoroughly justified. The view of the service was that the arrangements now proposed were not satisfactory as a permanent settlement, and that the cuts which had been suffered in the last few years had represented sacrifices quite out of proportion to that suffered by any other section of the community. The scheme did nothing for acute and chronic unemployment.

An amendment to reduce the vote by £100, moved by Mr. M. JONES, was negatived and the vote agreed to.

Housing Bill in Committee

The Standing Committee of the House of Commons which is examining the Housing Bill considered, on February 21st, Clauses 3, 4, and 5, and approved them with small amendments. On Clause 4—power of Minister to increase the permitted number of occupants temporarily to meet exceptional conditions—Mr. SHAKESPEARE said the Minister would have power, after consulting the Advisory Committee, to relax the standard in respect of a particular area or district. He had in mind areas in the North of England where the type of house known as the "one up and one down" was found, and also other areas, where the majority of the houses had very large rooms. In those cases it would be impracticable to enforce a standard until there was available accommodation. A Labour amendment to prevent this dispensing power being used beyond three years was withdrawn.

On February 26th Clauses 7 (duty of the landlord to inform local authority of overcrowding), 8 (right of landlord to obtain possession of overcrowded house), and 9 (enforcement of foregoing provisions) were ordered to stand part of the Bill.

Clause 10 enacts that regulations prescribing the duties to be performed by medical officers of health of boroughs and urban and rural districts, and by medical officers of health in London, shall include provisions for imposing on those officers a duty to furnish annually to the Minister of Health particulars with respect to conditions in relation to overcrowding and, in particular, to furnish particulars of any cases where dwelling-houses in respect of which the local authority has taken steps for the abatement of overcrowding have again become overcrowded. Sir F. FREMANTLE asked if the Minister of Health would arrange, when the new duties were being considered, that it should be the duty of the medical officer of health in a district to give a report, not only to the Minister, but also to the county council. The county council, he said, had certain concurrent powers in housing and other matters which were often invaluable, not by way of penalizing, but by helping the district authorities, and it was a statutory duty that the annual report of the medical officer of a district should go to the county council. He asked that these reports on housing should also go to the medical officer of the county council. Sir HILTON YOUNG said that he certainly would consider the point raised by Sir F. Fremantle.

The clause was ordered to stand part of the Bill, and the committee adjourned until Thursday, February 28th.

Osteopaths Bill

The Select Committee of the House of Lords on the Registration and Regulation of Osteopaths Bill will meet for the first time at 11 a.m. on Monday next, March 4th, in Committee Room 3, House of Lords. It is probable that it may proceed at once to hear the opening speech by counsel supporting the Bill, followed, if time permits, by evidence. It is understood that the committee will probably sit on Mondays and Fridays from 11 a.m. to 4 p.m. until its work has been completed.

Child's Death after Scarlet Fever Inoculation.—In reply to Mr. Groves, on February 20th, Sir HILTON YOUNG said his attention had not been called to the death of an 18-months-old child in the Bradford Children's Hospital on January 18th in consequence of the administration of antitoxin as a precautionary measure against scarlet fever, though he had heard of a similar death at Bramhope Children's Orphanage in August, 1934. Inoculation against scarlet fever was a matter within the discretion of the local authorities acting on the advice of their medical officers, and he would not be justified in advising local authorities to cease the prophylactic inoculation of children admitted into fever and other hospitals.

Imported Goat Hair Disinfection.—In reply to Mr. Rhys Davies, on February 20th, Sir JOHN GILMOUR said he had decided that the present arrangements for the compulsory disinfection of goat hair at the Government station should be extended to imported goat hair generally, with a view to preventing anthrax. It was proposed that the necessary order should be made at the Privy Council meeting on February 21st, and take effect two months hence. It was thereupon pointed out by Sir FRANCIS FREMANTLE that present stocks would possibly last two years, and might spread infection if not dealt with.

Yellow Fever Infection by Air.—Mr. BUTLER told Captain Cunningham-Reid on February 21st that he had seen a Press report on the subject of the danger of introduction of yellow fever into India by infected mosquitos in aeroplanes. The Government of India was alive to the danger, and had been giving the problem its earnest consideration for some years. Any suggestion made by the director of the Malaria Survey would receive close and urgent attention.

Under-nourishment Inquiry in Durham.—Replying to Mr. Batey on February 21st, Sir HILTON YOUNG said that the report of the officers instructed by himself and the President of the Board of Education to inquire into the allegations of under-nourishment in the County of Durham had only just been received, and was under consideration. He had no doubt that the distinction between malnutrition and under-nourishment had been considered by the investigating officer.

Schools and Pasteurized Milk.—Mr. RAMSBOTHAM told Sir Alfred Knox on February 21st that the ground for the recommendation made by the Board of Education to schools to use when possible pasteurized milk was the superior safety of that milk. A statement of the County Councils Association at Westminster that they were not convinced that pasteurized milk was superior to raw clean milk of Grade A quality as a food for children appeared to refer to the relative nutritive values of pasteurized and raw milk. On the latter point the Cattle Diseases Committee of the Economic Advisory Council expressed the opinion that, on the evidence available, any recognizable changes of quality induced in milk by pasteurization rightly conducted were, as a whole, too small to outweigh the advantage inherent in the protection from infection. In view of this and of opinions expressed by the Royal College of Physicians and other bodies, he could not see his way to withdraw the recommendation to schools.

Insulin for the Uninsured.—Sir HILTON YOUNG told Mr. G. Griffiths, on February 21st, that he had no authority to issue an order that all diabetics, members of approved societies, who had run out of medical benefits under the health insurance of 1932, should continue to have their insulin free. Local authorities had power to provide insulin for persons in need of it who were unable to purchase it.

Provision of Mortuaries.—In reply to Mr. Bossom, on February 21st, Sir HILTON YOUNG said he appreciated the conditions which sometimes were encountered in housing developments when a public mortuary was not available in the immediate vicinity. Local authorities had adequate powers, under the Public Health Acts, to provide mortuaries. There was statutory power vested in the Ministry of Health, or in the case of London in the London County Council, to call upon the appropriate authority to provide a mortuary.

Public Vaccination.—On February 26th Sir HILTON YOUNG informed Mr. Groves that the standard of merit formerly fixed as the basis of the awards to public vaccinators—namely, that the scars produced by the vaccinator must be well marked in their foveation, and must have, collectively, at least a half square-inch total area—was not now in force. The present instruction to public vacinators in this matter was contained in paragraph 7 of the Third Schedule to the Vaccination Order, 1930.

Hutments for Soldiers.—On February 26th Mr. HACKING informed Mr. Hicks that, apart from hutments which had been specially reconstructed, approximately 12,500 men in the Army were housed in huts or hutted buildings in stations at home and over-seas, excluding India. It was the policy of the War Office to replace these buildings, and more than £700,000 had been expended in the last five years in this connexion; but many years must necessarily elapse before all the hutments could be replaced. He was not aware of any cases of troops living in hutted accommodation which should be condemned as unsuited for habitation. It was the intention to provide separate water-closet accommodation, and, eventually, separate bathrooms, for all married couples on the married quarters roll who lived in barracks. This was being done gradually, and these improvements were included in all new constructions. He was satisfied that good progress was being made.

Turpentine in Mistake for Local Anaesthetic.—On February 26th Mr. HICKS asked the Financial Secretary to the War Office if he was aware of the serious illness of a private in the Royal West Kent Regiment, following the administration of a local anaesthetic in the course of teeth extraction. Mr. HACKING replied that he was aware of this regrettable case. Owing to a grave mistake, turpentine was injected instead of the proper local anaesthetic. No other soldiers were similarly treated. Suitable disciplinary action in the matter had been taken, and special instructions had been issued, designed to exclude the possibility of any similar mistake occurring in future. He was happy to say that the soldier's general health was now reported to be good.

Pensions in India.—On February 25th Sir SAMUEL HOARE, replying to Mr. Burnett, said that eligibility to retire on proportionate pension was at present confined to members of the all-India services and persons holding posts, other than listed posts, borne on the cadres of these services who were appointed or selected for appointment before January 1st, 1920, and who were not permanently employed directly under the Governor-General in Council. The total number of officers who retired on proportionate pension between November, 1921, when the scheme was introduced, and the end of 1934 was 599. The all-India services, which number nine, included the Indian Veterinary Service and the Indian Medical Service (Civil).

Medical News

On Wednesday, March 6th, at 8 p.m., Sir Henry Richards will give an address on the "Problem of Noise" before the Royal Society of Arts, John Street, Adelphi, W.C., with Lord Elton in the chair.

The annual dinner of the Irish Medical Schools and Graduates' Association will be held at Claridges Hotel on Saturday, March 16th, at 7.45 p.m., when the guests will be the Marquess of Dufferin and Ava and Sir Richard Livingstone.

The fourth annual dinner and dance of the North-West London Medical Society will be held at Park Lane Hotel on Thursday, March 28th. Reception at 7.30 p.m. Dinner at 8 p.m. Cabaret and entertainment, also bridge. Tickets (13s. 6d. each) may be obtained from the secretary, or from Dr. J. O. Musson, 10, Chichele Road, N.W.

The Food Education Society (29, Gordon Square, W.C.) announces that three lectures will be given by Dr. Clement Nicory at the London School of Hygiene and Tropical Medicine, Keppel Street, W.C., on Tuesdays, March 12th, 19th, and 26th, at 5.15 p.m. The subject of the first lecture is "Chronic Rheumatism, its Prevention and Treatment," the second lecture is on "Malnutrition, with special reference to Obesity," and the third, "The Chief Causes of Ill-health." Admission free.

The Food Group and Liverpool Section of the Society of Chemical Industry will hold a symposium on meat in the Chemical Department of Liverpool University on March 8th. The proceedings will be divided into an afternoon session covering the chemistry of meat and an evening session dealing with meat storage. Further information may be had from the head office of the society, Central House, Finsbury Square, E.C.2.

The British Red Cross Society (County of London Branch) will shortly hold a course of seven lectures on "First Aid in Chemical Warfare," for medical practitioners. Particulars may be had from the county secretary, British Red Cross Society, 9, Chesham Street, S.W.1.

Part II of the series of lectures and practical courses of instruction for the diploma in psychological medicine at the Maudsley Hospital will be continued during March, April, and May. Inquiries as to lectures, fees, etc., should be addressed to Dr. F. Golla, honorary director of the medical school, Maudsley Hospital, Denmark Hill, S.E.5.

A meeting on behalf of the St. Pancras House Improvement Society will be held at West Wing, Outer Circle, Regent's Park, on Tuesday, March 12th, at 6 p.m., when an author (Mary Borden), an architect (Basil Ward), and a housing worker (Lady Stewart, organizing secretary, North and South-West St. Pancras Groups) will speak on bad housing, human needs, remedies, and solutions. A housing film, entitled "Paradox City," will be shown. Information may be had from Lady Stewart, 118A, Euston Road, N.W.1.

The Fellowship of Medicine (1, Wimpole Street, W.) announces that Mr. Percival P. Cole will give a pathological demonstration at the Wellcome Museum of Medical Science on March 7th, at 3 p.m., on tumours of the bone. On March 11th Dr. John Franklin will lecture on skin diseases. Dr. K. H. Tallerman will give a special demonstration on children's diseases at the London Hospital on March 9th, at 3 p.m. Forthcoming courses include a week-end course in clinical surgery at the Royal Albert Dock Hospital, March 9th and 10th; a week-end course in chest diseases at the Brompton Hospital, March 23rd and 24th. Courses occupying longer periods include orthopaedics at the Royal National Orthopaedic Hospital, March 11th to 23rd; clinical medicine and surgery at the National Temperance Hospital, March 14th to 20th (including Saturday and Sunday); thoracic surgery at the Brompton Hospital on three days a week from March 4th to 29th. This course is intended for practitioners who in the ordinary course of their work may be called upon to perform chest operations. Courses, clinics, etc., arranged by the Fellowship are open only to members and associates.

Following its recognition by the University of London as an approved clinic in connexion with the post-graduate diploma in psychology, the Institute of Medical Psychology has arranged a course of eleven lectures, on "Mental Health in Childhood," at Malet Place, W.C.1. The lectures form part of a clinical course for the University's academic diploma in psychology.

The Duke and Duchess of Kent have both consented to be patrons of the Royal Waterloo Hospital, in Waterloo Road, London. The last Duke of Kent—father of Queen Victoria—was one of the hospital's royal founders, and attended the inaugural meeting held in 1816 at the London Tavern.

A summary of the report of the Joint Council of Midwifery, making recommendations for a salaried service of midwives, appeared in last week's *Journal* (p. 371). The report is now published in pamphlet form (price 6d.), and may be purchased directly from the National Birthday Trust Fund, 57, Lower Belgrave Street, S.W.1.

The announcement is made as we go to press that Sir George Newman will retire on March 31st from the posts of Chief Medical Officer of the Ministry of Health and of the Board of Education, and will be succeeded by Dr. A. Salusbury MacNalty, who, in turn, will be succeeded by Dr. Thomas Carnwath as deputy to the Chief Medical Officer.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed **to The EDITOR, British Medical Journal, B.M.A. House, Tavistock Square, W.C.1.**

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

The **TELEPHONE NUMBER** of the British Medical Association and the *British Medical Journal* is EUSTON 2111 (internal exchange, four lines).

The **TELEGRAPHIC ADDRESSES** are:
EDITOR OF THE *BRITISH MEDICAL JOURNAL, Aitiology Westcent, London.*
FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate Westcent, London.*
MEDICAL SECRETARY, *Mediseeva Westcent, London.*

The address of the Irish Office of the British Medical Association is 18, Kildare Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 62550 Dublin), and of the Scottish Office, 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 24361 Edinburgh).

QUERIES AND ANSWERS

Narcolepsy?

"W. M. D. D." asks for advice in the case of a healthy man, aged 46, able to do his work efficiently without tiredness, who falls asleep in the middle of his evening meal, during a course, or at any time when he feels there is opportunity of relaxation. There is no history of influenzal attack preceding this condition, which started about four years ago.

Menopausal Symptoms

"M. F. G." writes: I would be glad to benefit by the experience of any who have been successful in the treatment of "flushings." One of my patients is very acutely distressed by these symptoms, and often cannot remain in bed, or indoors, owing to the feeling of oppression. Simple bromides seem too depressing.

Colostomy Belt

Mr. A. T. SLATER writes: Your correspondent "M." (January 26th, p. 187) should advise his patient to lightly pack the cup of the colostomy appliance with cellulose tissue. This acts as an absorbent and at the same time prevents extrusion of the bowel. The alternative is to fit a belt of the St. Mark's pattern, with a shallow celluloid shield, but this has no rubber pad, and is less comfortable.

Treatment of Cramp

Dr. G. A. FERRABY (Worthing) writes in reply to "W." p. 399): More than forty-five years ago sulphate of copper, in small doses, was recommended in this column. Usually 1/10 grain thrice daily for a few days will give more or less permanent relief. In one excessively severe case treatment was continued for many weeks and at intervals for some months. This patient had been disturbed many times almost every night for years. Latterly I have used small tablets of 1/6 or 1/10 grain of copper sulphate specially made, but previously I gave

℞ Cupr. sulph. ... ... gr. vi
Acid. sulph. dil. ... ... ♏ x
Aq. ... ... ad ʒ viij
F. mist. Sig.: ʒ j t.d.s. ex aqua.

with instructions to suspend treatment after a few nights' immunity occurred. During an attack forcible extension of the contracted muscle stops the spasm. Extension must be maintained a short time, and the muscle left flaccid a little longer, to prevent recurrence.

Income Tax

Payment to Wife for Professional Services

"F. S." had his accounts prepared for the year ended September 30th, 1934, and the assessment was made on that basis. He "afterwards realized" that as his wife acted as clerk and bookkeeper during the year he could have

"claimed" for her. So on January 14th, 1935, he paid her £50 by cheque for her services, and claimed to reopen the assessment to obtain that deduction. The inspector of taxes refuses, as the salary was not shown in the accounts.

*** The crux of the matter is whether there was an employment of the wife in the practice during the year ended September 30th, 1934. It is always difficult to prove that husband and wife are legally in the position of employer and employee, as the services rendered may have their foundation in the marriage relationship. Regular, periodic payment of the agreed rate of remuneration is useful as evidence. In the present case no payment was made until three months after the end of the year, and then, it would seem, only because of the income tax point. It is probable that it would be held on appeal that the services rendered by the wife were given in the absence of any agreement which would constitute legal employment.

Expenses Arising from Hospital Appointment

"P. Q. R." holds an appointment at a voluntary hospital, for which he receives an honorarium of £15 per annum. He has no car and spends about £6 a year in travelling from his residence—where he carries on a general practice—to the hospital. The claim to deduct the expense is refused on the ground that he goes to the hospital to gain experience.

*** In our experience such honoraria and expenses are included in the general return without objection being raised by the authorities. The specific ground in this case seems largely irrelevant—the honorarium assessed is a payment for services and should be treated consistently as such. An "appeal" would be useless, as the matter is one of practice rather than law; it would be preferable to put the facts before headquarters—for example, by a letter to Somerset House. The cost of stationery specially printed for professional purposes is always allowed so far as we know.

LETTERS, NOTES, ETC.

Herpes and Injury

Request for Information

Dr. CLEMENT W. BRANSON (Rotherwood, 24, Avenue Road, Bournemouth) writes: Out of the last seventy-nine cases of herpes zoster of which I have records I find that seven were closely associated with injury, as regards both the time of the appearance of the eruption and the region affected, and a causal relationship is strongly suggested. In order to pursue the question further I should be grateful for the help of any practitioner in getting a necessary "datum line" on which to base statistical evidence. The information required is simply this: What percentage of patients attended for some other reason than accident or injury have had any kind of injury or accident during the seven days prior to attendance? If a sufficient number of practitioners would send me their findings in one hundred consecutive or unselected patients a satisfactory "datum line" could, I think, be got. Additional interest would attach to the findings if the nature of any injury recorded could also be stated. Any case of injury associated with herpes zoster should be noted. Not only will the information be got more quickly if a number of practitioners will help, but a comparison of results from different sources will be useful. The importance of a causal relationship between injury and herpes zoster will, I hope, be sufficient excuse for this appeal.

Queen Alexandra Davos Fund

Funds are available from this charity to enable educated people of small means who are threatened with tuberculosis, or who may be suffering from it in its earlier stages, to obtain the benefits of mountain air in Switzerland. The fund is not intended for those who are suffering from chronic or advancing disease, or who require surgical treatment. The cases considered suitable are those convalescing from a pleurisy or pleural effusion or with a lesion that is small both by clinical and by radiographic criteria. To selected cases grants are made at the rate of fifty Swiss francs a week during the late autumn, winter, or early spring, on condition that the recipient stays at an approved institution in Davos. Grants will also be made to parents or guardians of children of the professional and middle classes who may be suffering in the way already indicated or who have other chest disease, such as bronchiectasis, fibrosis, unresolved pneumonia, asthma, or chronic bronchial catarrh, to enable them to stay in an approved home for children. In general, patients require about 100 francs a week to enable them to live in comfort at Davos, which means that they require a private income of £3 a week in addition to the grant provided by the fund. Forms of application may be obtained from the honorary secretary, A. Stanley Herbert, Esq., 25, Birchin Lane, London, E.C.3. Applications will be considered by the selection committee, and if necessary an appointment will be made for the applicant to see one of the honorary examining physicians in London. If after this interview applicants are for any reason not considered suitable, a third-class railway fare will be paid to those residing over fifty miles from London.

Anti-fog Devices

Dr. ELLIS STUNGO (London, W.1) writes: I read with interest the remarks of "Safety First" (February 23rd, p. 400) in connexion with an anti-fog device, and would like to draw the attention of your readers to a new lamp of a different shape and principle called the "telephote" lamp. My experience, which may be of interest and value to others, is that this lamp gives a driving vision of approximately 70 feet, no matter how dense the fog. I am therefore able to maintain an average speed without undue strain on myself or danger to others. In addition, I find that the "telephote" lamp is definitely anti-dazzle, and projects a uniform cone of light over 300 yards long and opening out to a sixty-foot circle at that distance. There is an absence of scattered light. It is possible to focus the lamp by a ready adjustment for driving in any type of weather, and since fitting it on the dumb-iron I find I have no occasion to use my headlamps, thereby effecting considerable saving on the battery output. I have found that the "telephote" gives a safe and pleasant light for night work and obviates the necessity for dipping.

Padding the Driver's Seat

Dr. RONALD R. WALKER (Presteign, Radnorshire) writes: That this mechanical age is producing marked effects on the body cannot be denied. I have been consulted frequently of late by car drivers suffering from gastric troubles. These men have to drive directly after eating; as this applies to the general practitioner, the following notes may be of interest. The angle of the average driver's seat is about 120 degrees, with the shoulder bearing point padded out; this leaves a space into which the lumbar curve of the spine, normally concave, sinks, forming a backward curve and causing a corresponding groove across the abdomen below the ribs. The free flow of food from the stomach is hindered, and indigestion, hyperacidity, wind, and pain result. On getting in touch with Messrs. Morris, it was found that a large number of their service drivers were laid up with gastric troubles, and their managing director asked me to visit Oxford and go into the matter with him. *X*-ray photographs were taken of the effect of position, and I understand that the firm have produced a "lumbar curve" driver's seat in this year's commercial van. I have to drive 19,000 miles a year on my rounds and I have had my own seat padded, with excellent results, and look forward to the day when every driver's seat will be padded to produce a normal position while driving and so reduce fatigue and prevent the mechanical indigestion of which so many drivers complain.

Corrigenda

Dr. JOHN KINNEAR writes: Allow me to correct a slip which, unfortunately, occurred in my article on the streptococcal dermatoses, on page 293 of the *Journal* of February 16th. It states there that I have been able to improve on Sir Norman Walker's instructions for preparing starch poultices, whereas the reverse was my intention.

In the report of Mr. V. B. Green-Armytage's contribution to the discussion on sterilization in women (February 23rd, p. 379, fifth line from end of paragraph) the word "urethro-vesical" pouch should have been "*utero*-vesical" pouch.

Vacancies

Notifications of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 49, 50, 51, 52, 53, 54, 55, and 58 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 56 and 57.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 84.